

MODEL

TM14-20RH/RP

TM20-20RH/RP

TM20-30RH/RP

**COLOR MONITOR
OPERATION MANUAL**

Ikegami

PRECAUTIONS

In order to use this monitor safely, please read this entire manual and pay particular attention to the following items.

1. Do not use any power supply other than the regulation AC power.

2. Do not subject the monitor to strong impact.

Not only can this lead to breakdown, but it is dangerous because of the possibility of the CRT imploding.

3. Avoid storing or using this monitor in any of the following locations.

1) Locations hotter or colder than the regulation temperature.

If you place the monitor too close to a heat source or block off the ventilation hole in the cabinet, the temperature inside the monitor will rise. Not only will this reduce the life span of electrical parts, but it can also lead to breakdowns.

2) Locations subject to rain, snow, or excess humidity

Such locations can cause electrical leaks and breakdowns.

3) Locations with strong magnetism

4. Avoid exposing the CRT to direct sunlight.

If the CRT is subject to direct sunlight for a prolonged period, the fluorescent screen within the CRT will deteriorate, so be careful if using this monitor outdoors.

WARRANTY

If you can not get a picture even after making the daily adjustments and you think the monitor may be broken, please contact your local Ikegami dealer or Ikegami Tsushinki directly.

ACCESSORIES

Make sure that the following accessories have come with the monitor.

1. Operation manual
2. AC cable
3. Remote connector

* These specifications and appearance are subject to improvement without prior notice.

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1. OUTLINE

This series color monitors have the input systems suited to the diversified system needs. In addition to 3 video input systems, an RGB input system or a $Y/P_B/P_R$ input system is provided as a standard equipment. A D1, D2 or D3 input system (2 serial input systems and 1 parallel input system) or a Y/C input system can be provided as an optional equipment. RGB and $Y/P_B/P_R$ can be corresponded to various standards and you can adjust the chroma level by front panel. When the optional decoder board (PAL or SECAM) is inserted into the SLOT section in addition to NTSC decoder board, this monitor can be made automatically to operate with 2 format signals. Thus this product is the master monitor for the professional with the various functions, fine performance and stability which is corresponded to various broadcasting system and used for the final check of the video signal.

2. FEATURES

(1) High-performance inline Gun CRT

This monitor uses an inline gun dot mask high-detail CRT. The dot mask pitch is a fine 0.31 mm for the TM14-20RH/RP, 0.43 mm for the TM20-20RH/RP, and 0.28 mm for the TM20-30RH/RP.

Since the CRT for the 20 series (the same CRT as for the 15 and 19 series) coats bismuth oxide (BiO) on the shadow mask and the 30 series uses invar material for the shadow mask material, the doming (beam displacement due to thermal deformation of the shadow mask) when the brilliance is raised is greatly reduced.

(2) Digital Control

Control is completely digitized with an 8-bit MPU and 10-bit D/A converter. Therefore, various status displays are possible and auto setup can be carried out by just adding the probe. Since control uses rotary encoders, you can adjust with the same feeling as with the analog controllers you have used up till now.

(3) Auto Setup Function

The optional ASP-15 auto setup probe can be used to automatically adjust the factory setting color temperature. Also, if you have the probe memorize the operator's unique color temperature, then you can automatically set any number of monitors (15 series, 18 series, 20 series, 30 series) to that color temperature.

(4) 4 Color Temperatures can be Stored into Memory

This monitor can store three color temperatures in addition to the factory setting. This means you can quickly and easily select the white balance setting best for the state of the input image and the usage objective.

(5) Remote Control Function

In addition to the standard parallel remote connector, there are also an optional infrared wireless remote controller(RCT-20) and an optional *serial control box that can use a loop through connection with a BNC cable.

Any single one of these remote controllers can control up to 99 monitors.

* ... made-to-order

(6) Beam Feedback System(BFS)

The beam feedback system, which detects the CRT cathode current, provides images with stable white balance for a long time.

(7) Built-in CCD Comb Filter (only NTSC)

The CCD 1H-delay line greatly improves the cross luminance and the cross color. Also, the optional Faroudja comb decoder provides an image with no cross luminance in the section with no vertical relationship.

(8) Sufficient Input Systems

There are four input systems, three composite video input and one RGB or $Y/P_B/P_R$ ($Y/B-Y/R-Y$) input.

(The latter can be switched between RGB and $Y/P_B/P_R$ with the pull-out panel operation section.)

Options are 8/10-bit digital (D1, D2, D3) input and Y/C input. In addition, the DC301 dual component board can be used for 2-channel component input.

(9) Built-in Generators

Five different types of test signals (cross hatch, flat field, window, character, and step wave with pluge signal) and you can switch the output format between 525 (60 Hz) and 625 (50 Hz) with simple menu operations. Safe title signals (80%, 85%, 90%, 95%, 100%, 80+90+100%, 5-partition cross hatch, and 10-partition cross hatch) are built in as standard features.

(10) Video Board Modularization

The video system boards are plug-in type. To make repairs and checks easier, the video, deflection, and power boards can be removed with the monitor itself still in its rack.

(11) Component Input that Meets Various Standards

In order to meet such standards as M II, Beta, N 10, and SMPTE, R-Y and B-Y levels relative to the Y level can be adjusted freely with the CHROMA manual control on the front panel and by just setting the standard to use with the pull-out panel, you can automatically switch the chroma preset level. The chroma level can also be adjusted freely for RGB signals.

(12) Handles All Three Formats: NTSC/PAL/SECAM

In addition to the standard decoder board, a variety of option decoder boards can be mounted in slots to automatically monitor composite signals in all three formats, NTSC/PAL/SECAM on a single monitor.

Also, since the deflection system is adjusted to be able to handle 525 (60 Hz) and 625 (50 Hz) formats with the standard configuration, if the signals are analog component signals (RGB, Y/P_B/P_R) or digital component signals (D1), you can monitor signals in almost any format without a decoder board.

(13) Digital Input

Digital input can be corresponded to parallel and serial inputs for D1, D2 or D3. The circuit treats by 10 bit. You can switch to 8 bit or 10 bit by front panel operation. Because of using the filter built-in x/SIN x correction based on the 601 of the CCIR recommendations in post filter, the faithful converting digital into analog is possible.

(14) V/VS (0%/7.5% set up) Function

The V/VS function is the function to switch the clamp level (black level) of the monitor in conformity to the set up level (0% or 7.5%) of input signal. Because the V/VS setting can be set with each channel by menu operation, if the set up level of selected signal is changed, keeping the black level fixed is possible.

3. SPECIFICATIONS

3-1. General

- (1) Power : Single-phase 50/60 Hz AC
100 V - 120 V/200 V - 240 V $\pm$ 10%
Approx. 160 W
(Automatic switching between 100 VAC and 200 VAC)
- (2) Ambient Temperature : 0°C - 40°C
- (3) Humidity : 90% or above
(however, no condensation allowed)
- (4) Dimensions and weight :
TM14-20RH/RP : 450 (W) $\times$ 265 (H) $\times$ 515 (D)
approx. 26 kg
TM20-20/30RH/RP : 450 (W) $\times$ 399 (H) $\times$ 515 (D)
approx. 38 kg
- (5) Standard accessories :
Power cable, Remote connector,
Operations manual (One each)
- (6) Demodulation : R-Y/B-Y System
- (7) Operation : Continuous
- (8) X-ray Emission : 0.1 mR/H or less (At all locations
50 mm from the outside of the
monitor)

3-2. Input signal

- (1) Composite video signal :
BNC 3 systems (loop through)
- (2) RGB or Y/P_B/P_R signal : *1
BNC 1 system (loop through) *2
- (3) Digital signal (option) : *3
D1 (digital components)
D2, D3 (digital composite)
Parallel input : D-SUB 25-pin 1 system
(single end)
Serial input : BNC 2 systems (single end)
Serial output : BNC 1 system
(monitor output) *4

*1 For details on RGB/Y/P_B/P_R switching, see 5-6.(5).

*2 When the optional dual component board is used, 2 inputs can be used. However, in this case, loop through connection is not possible.

*3 D1, D2, and D3 can be switched between 8 bits and 10 bits for usage. Use switching between parallel input and serial input. For details on how to switch, see 5-6.(5).

*4 The digital signals (parallel or serial) selected on the monitor are output serially.

3-3. Rating

(1) Input levels

• Composite input

VS: 1.0 Vp-p positive polarity
V: 0.7 Vp-p positive polarity (Japan, Europe)
V: 0.714 Vp-p positive polarity (U.S.A.)

• Sync input

4 V - 6 V p-p negative polarity

• RGB input

VS: 1.0 Vp-p positive polarity
V: 0.7 Vp-p positive polarity
When R, G, and B all have sync signals, when only the G signal has a sync signal, or when neither R, G, nor B has a sync signal

• YP_BP_R input

The standard input is Beta or M II (SMPTE, N10)

Beta <525/60 Hz>

Y signal White: 714 mVp-p
 Setup: 53.6 mVp-p
 Sync: 286 mVp-p

P_B, P_R signals: 700 mVp-p
(100/7.5/75/7.5 COLOR BAR)

<625/50 Hz>

Y signal White: 700 mVp-p
 Setup: 0 mVp-p
 Sync: 300 mVp-p

P_B, P_R signals: 700 mVp-p
(100/0/75/0 COLOR BAR)

M II (SMPTE, N10)

Y signal White: 700 mVp-p
 Setup: 0 mVp-p
 Sync: 300 mVp-p

P_B, P_R signals: 525 mVp-p
(100/0/75/0 COLOR BAR)

The monitor can be set from the front panel for signals other than standard.

• Y/C input

Y signal: 1.0 Vp-p (VS)
C signal: 0.286 Vp-p (burst level)

• Digital input

ECL 10 K (8-bit or 10-bit)

(2) Input Impedance

Composite input, sync input, RGB input, YP_BP_R input

High-impedance bridge connection or
75Ω terminator
(75Ω terminator plug is optional)

Y/C input

High-impedance bridge connection or
75Ω terminator (switched)

Digital serial input 75Ω terminator only

Digital parallel input 110Ω terminator only

(3) Return Loss 46dB or high (10MHz)

3-4. Brightness and Contrast

(1) CRT: In-line electron gun dot shadow mask

Dot trio pitch
TM20-30RH/RP: 0.28mm
TM20-20RH/RP: 0.43mm
TM14-20RH/RP: 0.31mm

(2) Horizontal Resolution:

When screen center is 35 Ft-L
TM20-30RH/RP: 900 lines or greater.
TM20-20RH/RP: 700 lines or greater.
TM14-20RH/RP: 700 lines or greater.

(3) Preset Contrast:

Factory setting is 35Ft-L
(100% window signal input)

(4) Maximum Brightness:

TM20-30RH/RP: 50 Ft-L, or greater
TM20-20RH/RP: 50 Ft-L, or greater
TM14-20RH/RP: 70 Ft-L, or greater
(At 100% window signal input,
BRIGHTNESS PRESET, CONTRAST
MAX.)

3-5. Decoder Out (Option)

Y: 0.7Vp-p

P_B, P_R: 0.525Vp-p
(100/0/75/0 COLOR BAR)

This applies at the time of signal input
for composite video, composite digital,
and analog components (for RGB and
YP_BP_R).

High-impedance output.

3-6. Luminance Signal and Video Signal Systems

(1) Frequency characteristic

60 to 10 MHz +1, -3 dB RGB input (NTSC)
50 to 10 MHz +1, -3 dB RGB input (PAL)

(2) Luminance Signal System

a) Frequency response:

±1dB at 50 to 7MHz (Notch OFF)
-30dB at 3.58MHz (Notch ON)

b) 2T pulse and 2T Bar T pulse (K_{FB}):

± 1% (Notch OFF)
± 2% (Notch ON)

c) Short-time Distortion (K_{SD}):

± 1% (Notch OFF)
± 2% (Notch ON)

d) Sag: ± 1%

e) Linearity (DG):

Below 2%

f)Black Level Stability :

1% or less for APL variation of 10% - 90%

g)Color Temperature Stability :

Below 1% after 500 hours of operation at 10°C - 40°C

h)Aperture Correction :

With subcarrier trap on, 2T pulse overshoot is symmetrical.

(3)Noise :

Sync noise : Above -46dB

Hum noise : Above -55dB

Random noise : Above -55dB

3-7. Chrominance Signal System

(1)Frequency response :

At chroma signal test pin

NTSC : 3.58MHz $\pm$ 1MHz +1, -3dB

PAL : 4.43MHz $\pm$ 1MHz +1, -3dB

(2)Demodulation axis phase difference :

90° $\pm$ 1°

(3)Subcarrier frequency synchronizing range :

Lock in range NTSC : 3.579545 MHz $\pm$ 200 Hz

PAL : 4.43361875MHz $\pm$ 300Hz

(4)Phase Difference (only NTSC) :

Below 2°

(Burst frequency $\pm$ 10Hz, Burst level +6dB, -12dB, Change in atmospheric temperature 10°C, Where positions of the H-SYNC signal and the burst signal change within FCC standards)

(5)Delay compensation :

Delay time compensation error from luminance and P_R, P_B channel is less than 0.02 μ SEC.

(6)Color killer operating point :

Automatically operated when the burst level is 5 $\pm$ 1 IRE.

(7)Adjusters : Chroma level Above $\pm$ 6dB
Chroma phase $\pm$ 15°

3-8. Deflection and Sync Systems

(1) Picture size : a) NORMAL SCAN (4:3)

1% over-scan of effective CRT screen

b) UNDER SCAN (4:3)

Approx. - 7.5% of effective CRT screen

c) UNDER SCAN (16:9)

Width is the same as UNDER SCAN (4:3) and the aspect ratio is 16:9.

(2)Stability of Raster Size

When CONTRAST and BRIGHTNESS are preset, when the APL changes within 0%-100%, there is a variation of 1% or less.

(3)Deflection distortion

a) Deflection of axis

Below 0.5% of the height of the screen

b) Overall screen distortion

Below 0.5% of the height of the screen

(4)AFC time constant

NORMAL : 2mSec.

FAST : 0.5mSec.

SLOW : 7mSec.

(5)Sync stability: Operation will be stable when the input signal falls within the following parameters :

Internal sync :

Variation of $\pm$ 6dB in rated video input level values

External sync :

Negative voltage applied to external sync input terminal
0.3 to 8Vp-p

(6)High voltage :

a)Output voltage

TM20-30RH/RP : 25kV

TM20-20RH/RP : 25kV

TM14-20RH/RP : 25kV

b)Voltage fluctuations :

Within $\pm$ 1% for beam current of between 0 to 450 μ A with 150 μ A as a reference

(7) Convergence :

20 SERIES

- Center : 0.2 mm
- Within 80% circle of screen height : 0.3 mm
- Other than above : below 0.5 mm

30 SERIES

- Center : 0.15 mm
- Within 80% circle of screen height : 0.3 mm
- Other than above : below 0.45 mm

3-9. Functions

- (1) Faroudja comb decoder (option)
- (2) Safe title generator
(80%, 85%, 90%, 95%, 100%, 80+90+100%,
5-partition cross hatch, or 10-partition cross
hatch is selected and displayed)
- (3) Auto setup probe (option)
- (4) Infrared remote control (option)
- (5) Remote control through serial interface (option)
- (6) Built-in test signals
 - a) Cross hatch
 - b) Flat field
 - c) Window
 - d) Characters
 - e) Step wave with pluge signal
- (7) Video A/B split (variable)
- (8) Color/mono split (variable)
- (9) Beam feedback system
- (10) Menu assist
 - a) Safe title
Safe title color and screen display
position settings
 - b) Split
A/B split and color/mono split screen
partition position setting
 - c) User display
User display color and character
setting
 - d) System
Built-in board verification
Scanning format setting
Test pattern output setting
Delay bright setting
 - e) Input
Input signal setting
 - f) Digital/Analog
Data selecting in the serial remote
 - g) H phase
H phase memory setting
 - h) Level display
Preset level screen display setting
 - i) Delay
Delay mode setting
 - j) Screen
Screen mode setting
 - k) User display
User display output setting
 - l) Backcolor
Menu screen background color setting

m) Status

Control level display
Contrast, brightness, chroma, hue, R/
G/B background, G/B gain, rotation,
aperture level, fine focus, height, width,
H centering, V centering, H phase

n) Lock

Software lock selection

3-10. Memory

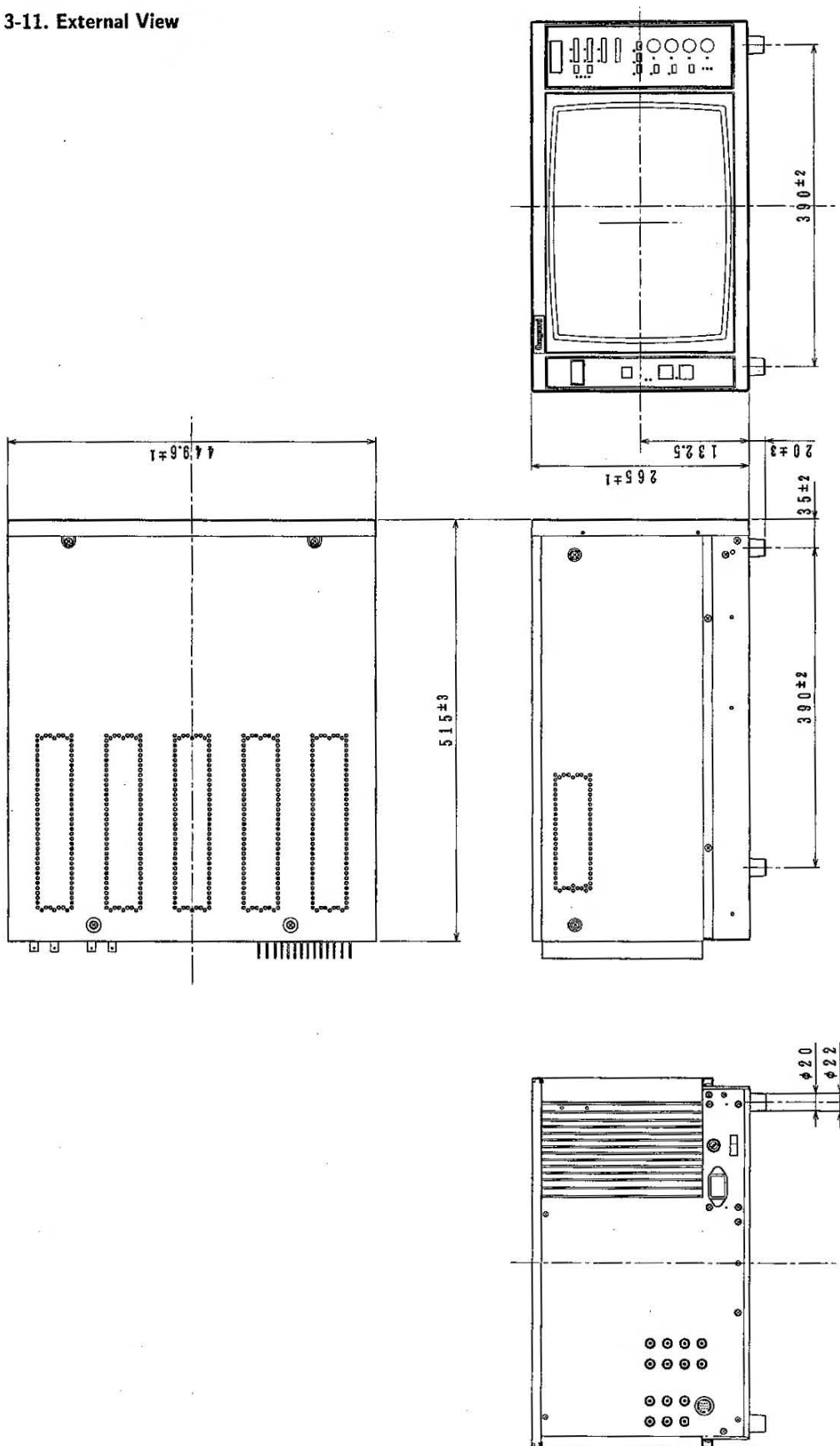
(1) Memory type

ROM ; 32 K byte programmable ROM
RAM ; 8 K byte static RAM

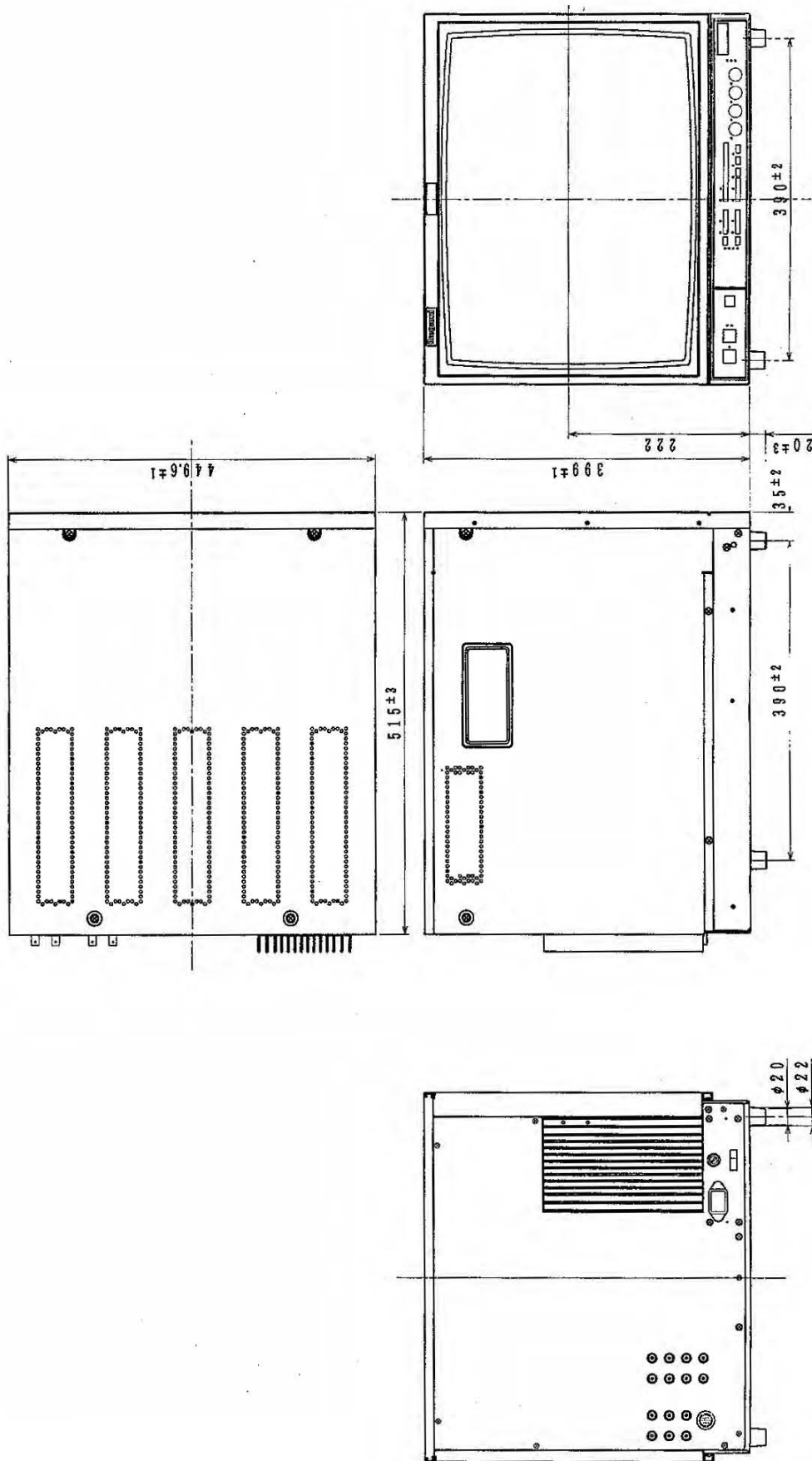
(2) Battery backup

Memory retention period ; above 10 years
Battery ; Lithium battery(BR2330-1HF)

3-11. External View



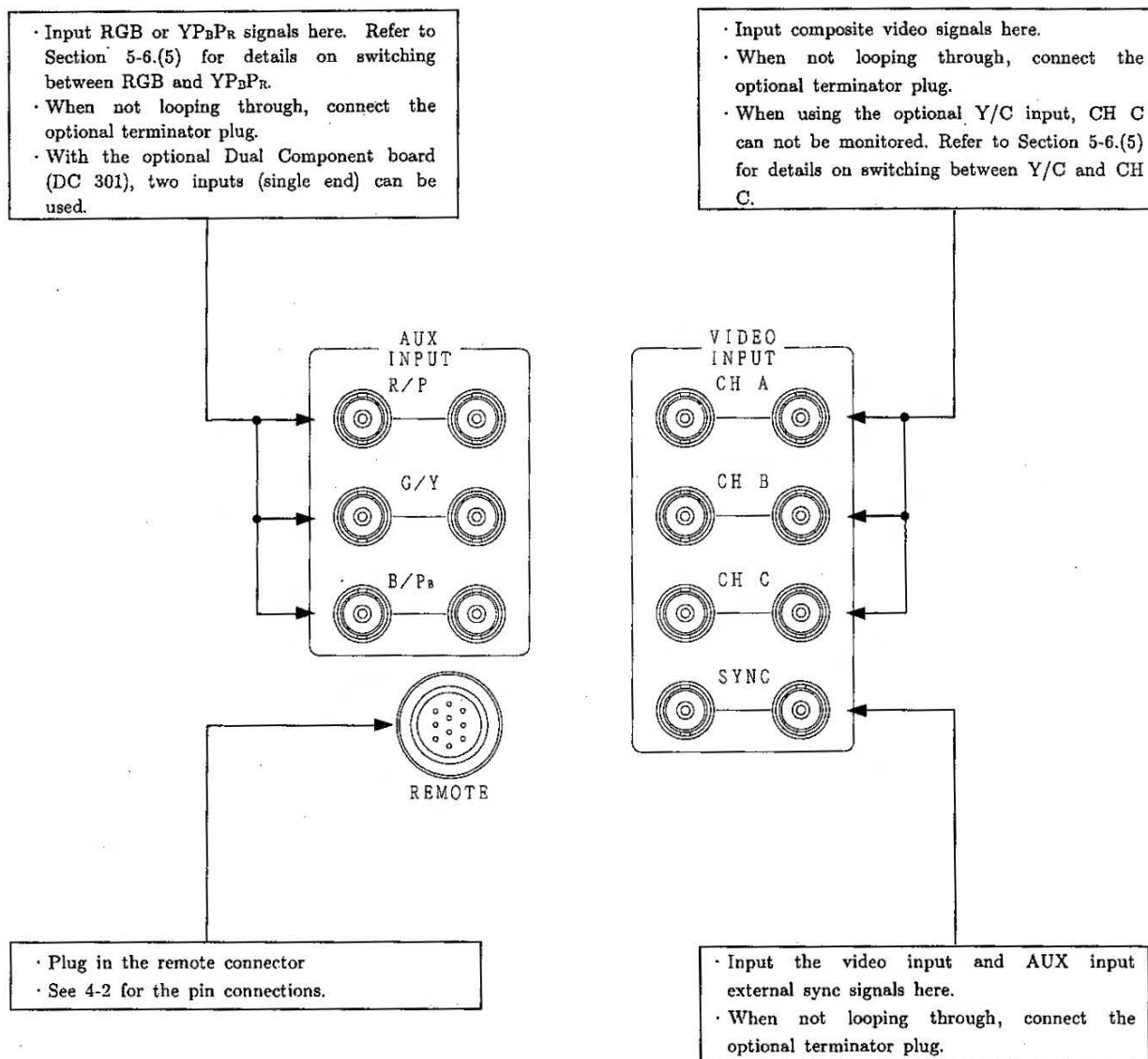
TM14-20RH/RP
COLOR MONITOR
EXTERNAL VIEW
K3-950009-3



TM20-20RH/RP
 TM20-30RH/RP
 COLOR MONITOR
 EXTERNAL VIEW
 K3-950008-4

4. INSTALLATION

4-1. Connection with External Equipment



4-2. Parallel Remote Connector Connection Procedure

(Notes)

From the program version 2.1 (displayed on the upper right of the MENU 1 screen), PARALLEL/REMOTE functions are changed as follows:

(1) Functional changes

Pin No.5 : SYNC INT (GND) / EXT → DIGITAL ON (GND) / OFF
 Pin No.8 : V (GND) / VS → 16:9 (GND) / 4:3

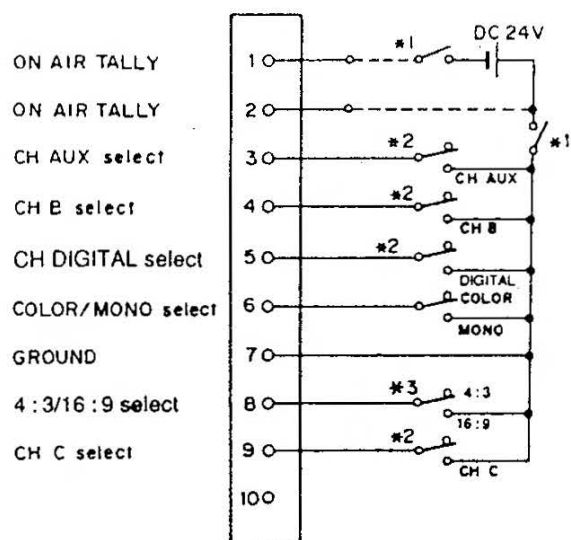
(2) While in the old version, front panel switches related to those on the remote side are disabled when the **REMOTE** switch is ON, from version 2.1, the front panel switches are operable when those on the remote side are in opening condition.

(3) SYNC INT/EXT and V/VS are automatically switched to their preset status when input channels are switched.

- To enable remote operation through the parallel remote connector, use the **REMOTE** switch on the pull-out panel to select parallel mode and switch On. See 5-3.(2).

From the program version 2.1 (displayed on the upper right of the MENU 1 screen), the ON/OFF control of TALLY and 4:3/16:9 can be done irrespective of the **REMOTE** switch operation.

- Connect the accessory remote connector according to the figure below.

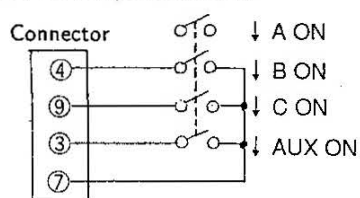


*1 Tally control can be implemented externally or from within the power supply. When implementing from within the power supply, short Pins 2 and 7 to each other. When implementing externally, supply 12 VDC or 24 VDC between Pins 1 and 2. (The polarity does not matter.)

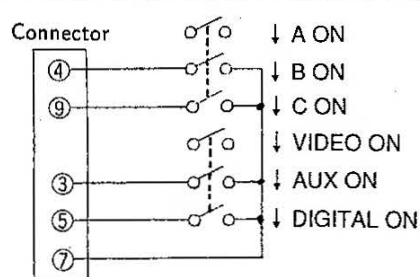
Fig. 4-1. Remote Connector Connection Procedure

*2 The switching of input signals can be done smoothly using interlock switches, as illustrated below.

(1) Switching of A B C, AUX



(2) Switching of DIGITAL A/B in addition to (1)



*3 The remote switching of 4:3/16:9 can be done regardless of the ON/OFF status of the **REMOTE** switch.

When the **REMOTE** switch is ON, the **SCAN** switch on the front panel is not operable unless the switch is open (4:3 position) on the remote side, while, when the **REMOTE** switch is OFF, the **SCAN** switch on the front panel is operable even if the switch is set to 16:9 on the remote side.

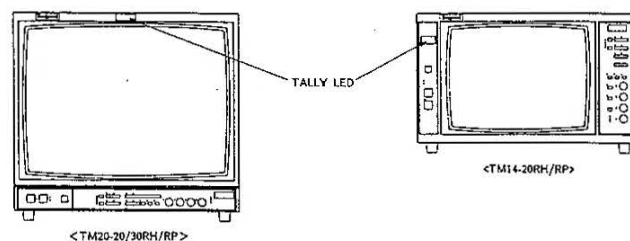


Fig. 4-2. Position of TALLY LED

5. DAILY ADJUSTMENT

Under normal usage conditions, the prescribed performance can be obtained by just operating the adjusters below.
The switch LEDs in the explanation below express the following meanings :



... LED Off



... LED blinking



... LED On

5-1. Power

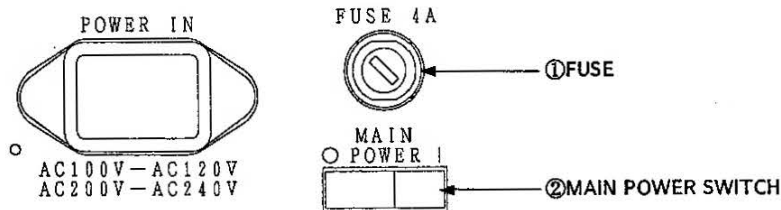


Fig. 5-1 Rear Panel

(1) Power ON

After switching "ON" the **MAIN POWER** switch indicated by ② on Figure 5-1, if you switch "ON" the **POWER** switch on the front left panel, the **POWER** LED lights up and the system comes on. (The system is shipped from the factory with this switch "ON".)
When you switch the power off, it is normal to just switch "OFF" the front panel **POWER** switch. There is no need to switch "OFF" the **MAIN POWER** switch.

(2) AC Input Supply Voltage and Fuse

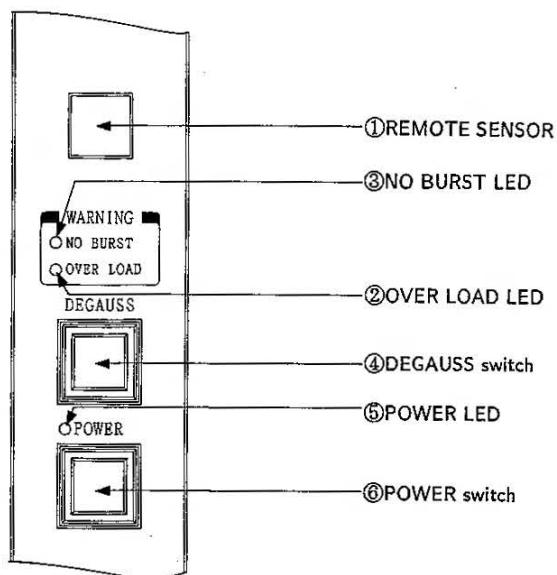
Since the AC input voltage is switched automatically, there is no need to change any switches when changes between 100-120 VAC and 200-240 VAC.

⚠ CAUTION

- If the fuse is burnt out, check the circuit trouble before changing the fuse.
- Turn the power OFF before changing because an electric shock or trouble may be caused.
- Be sure to use a fuse of the specified type and capacity.

5-2. Front Left Operating Section

<TM14-20RH/RP>



<TM20-20/30RH/RP>

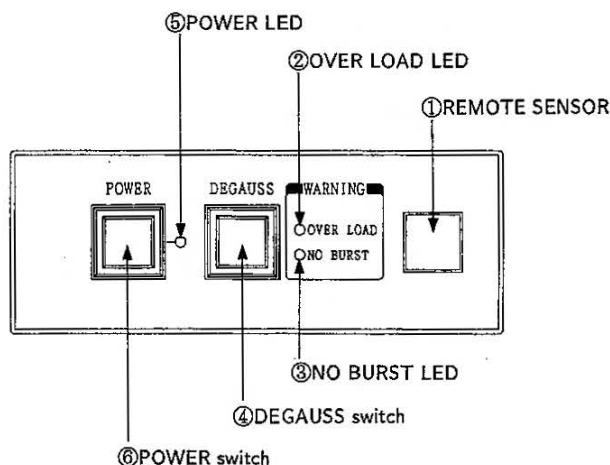


Fig. 5-2 Front Left Panel

(1) Degaussing

When the power is switched "ON" and this monitor starts up, the charged shadow mask is automatically degaussed. You can also degauss at any time by pressing the **DEGAUSS** switch indicated by ④ in Figure 5-2. Pressing the **DEGAUSS** switch over and over again continuously has no effect, so after pressing the switch, wait two or three minutes, then press again.

(2) Warning LED

The **WARNING** LEDs ② and ③ in Figure 5-2 indicate the following warnings.

② OVER LOAD LED

This LED lights up when the ABL circuit operates (when the brilliance rises too high).

⚠ CAUTION

If you use this monitor with the **OVER LOAD LED** lit up continuously, the CRT will deteriorate, so lower the brilliance.

③ NO BURST LED

This LED lights up when there is no burst for the signal for the selected channel (black and white signal) or when the color killer circuit operates (when the **CONTRAST** or **CHROMA** is fully off).

(3) Remote Sensor

The section indicated by ① in Figure 5-2 is the photoreceiver section for the RCT-20 optional infrared remote control.

5-3. Names and Functions of the Control Section

Under normal usage conditions, the designated performance can be obtained by just operating the adjusters below :

(1) Names and Functions of the Front Panel Operation Section

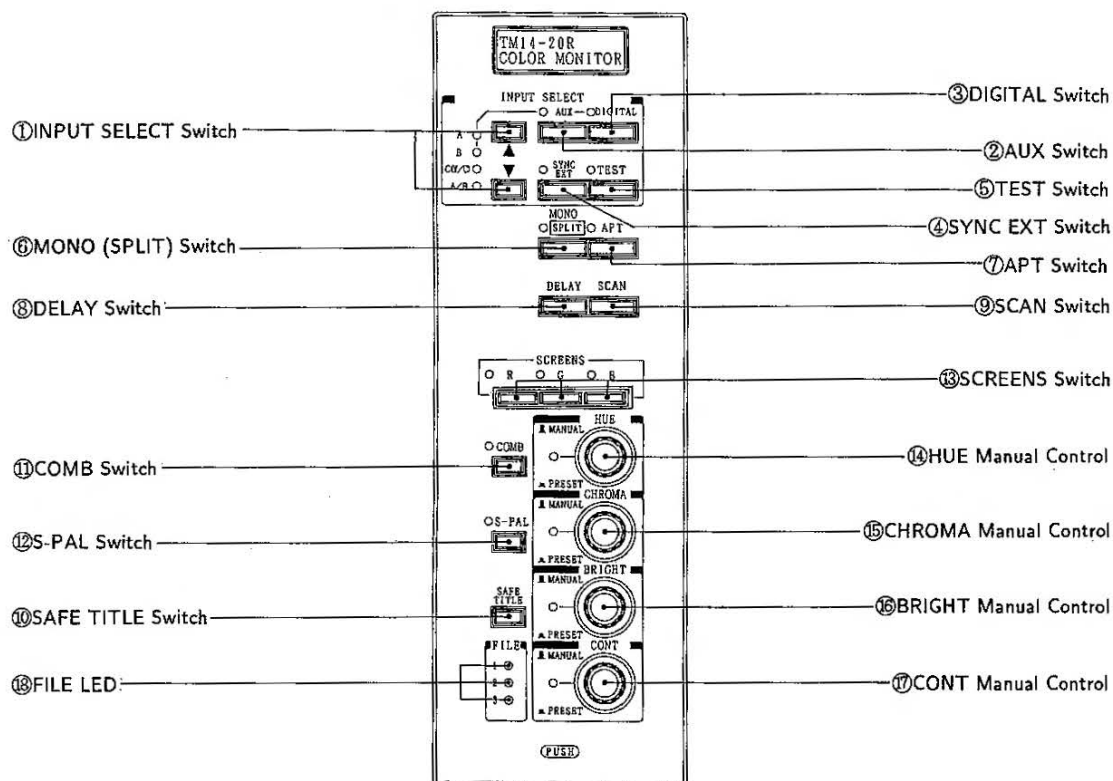


Fig. 5-3-1. TM14-20RH/RP Front Panel

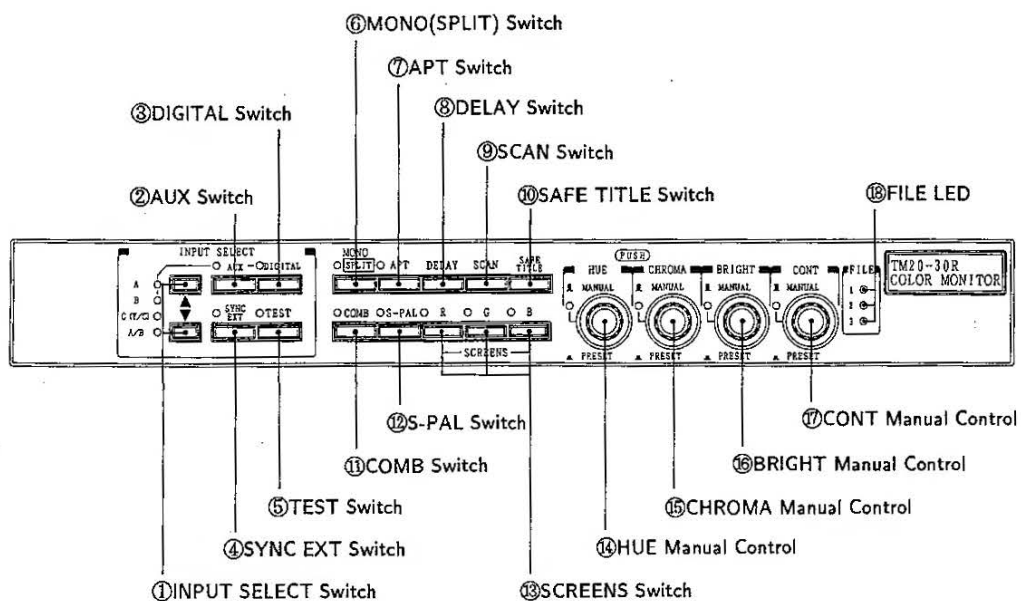


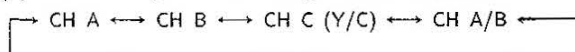
Fig. 5-3-2. TM20-20/30RH/RP Front Panel

① **INPUT SELECT** Switch

Use the  and  switches to switch the input signal as indicated below.

Since the input channels (composite signal input CH A, B, C and A/B, and AUX signal input CH A and B) operate automatically linked to the **SYNC EXT** switch, there is no need to operate the **SYNC EXT** switch every time you switch the channel.

(a) When composite video signals are selected



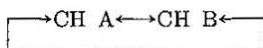
When CH C (Y/C) is selected, to select the optional Y/C input (special function module SF301), use Menu Item 3 (See 5-6.(5)) to select Y/C input.

The CH A/B split splits the screen into top and bottom so you can monitor the CH A and CH B composite signals simultaneously (CH A on top and CH B on bottom). You can easily adjust the color, adjust the white balance, and check the video phase for two cameras and two types of video signals. You can change the screen split position and which sync signal to use with their method in 5-6.(2).

(b) When AUX signal selected (**AUX** switch is "ON")

As a standard, one input is equipped. Only CH A can be selected.

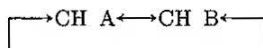
When optional dual component board (DC301) is installed, switches as indicated below.



(c) When DIGITAL signal selected

DIGITAL switch is "ON")

For CH A, the input (serial/parallel) which is set by Menu in 5-6 is monitored and for CH B, the serial input is monitored.



② **AUX** Switch

When this switch is pressed, the LED lights and signals input to the rear panel AUX INPUT can be monitored. When the switch is pressed a second time the LED goes out and operation is changed to the composite video channel.

* Either the RGB signal or YPbPr signal can be input through the AUX switch. Refer to Section 5-6.(5) for details of setting method.

Also, if the optional dual component board is installed, dual system input is possible. In this case, it is possible to switch between AUX A and AUX B using the **INPUT SELECT** switch.

③ **DIGITAL** Switch

When this switch is pressed the LED lights and signals input through the optionally installed DIGITAL input, can be monitored. Either DIGITAL input D1 or D2(or D3) can be installed. When the switch is pressed a second time, the LED goes out and operation is switched over to the composite input channel.

* There are two types of DIGITAL input, serial input (2 systems), serial output (1 system: Monitor out) and parallel input (1 system). With serial input it is possible to switch between DIGITAL A and DIGITAL B using the **INPUT SELECT** switch.

DIGITAL A ... parallel A input
serial A input
Selected by MENU operation.
DIGITAL B ... serial B input

④ **SYNC EXT** Switch

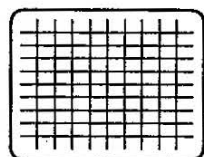
When using an external sync signal, set this switch to "ON". The state of this switch is stored into the memories of the input channels. When you set this switch once, it is switched over automatically. For example, it is set to "ON" at CH A and CH C and to "OFF" at CH B. When you switch the channel to CH A, B, and C in order with the **INPUT SELECT** switch, the **SYNC EXT** switch is switched to "ON", "OFF", and "ON" in order.

Note) When the DIGITAL input is selected, you can not operate this switch.

⑤ TEST Switch

Five types of test signals are built in as standard: cross hatch, window, full white, character, and step wave with pluge (for 525 line mode, two setup levels, 0% and 7.5%). In addition, you can switch the output between 525 lines(60 Hz) and 625 lines(50 Hz). (See 5-6.(4).)

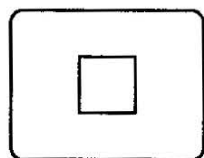
Also, V/VS of test signals are forced to set as follows. For details of the V/VS setting, see 5-6.(4).



<Cross hatch>

Used for adjusting the linearity, convergence, etc.

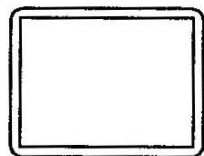
525 mode : VS
625 mode : V



<100% window>

Used for adjusting the white balance, brilliance, etc.

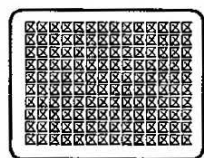
525 mode : VS
625 mode : V



<50% flat field>

Used for adjusting the purity, rotation, etc. (See 5-4.(4).)

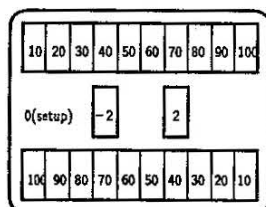
525 mode : VS
625 mode : V



<Characters>

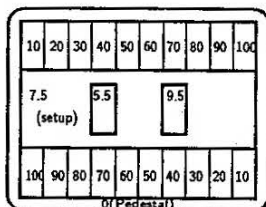
Used for adjusting the focus etc. (See 5-4.(3).)

525 mode : VS
625 mode : V



<Step wave with pluge>
(setup 0%) : V

Used for adjusting the white balance (5-4.(1)), brightness (5-4.(5)), etc. When the input signal is setup level 0%, this signal is used for various adjustments.



<Step wave with pluge>
(setup 7.5%) : VS
525 line mode only

When the input signal is setup level 7.5%, this signal is used for various adjustments.

⑥ MONO (SPLIT) Switch

Pressing this switch lights up the LED and makes the picture black and white.

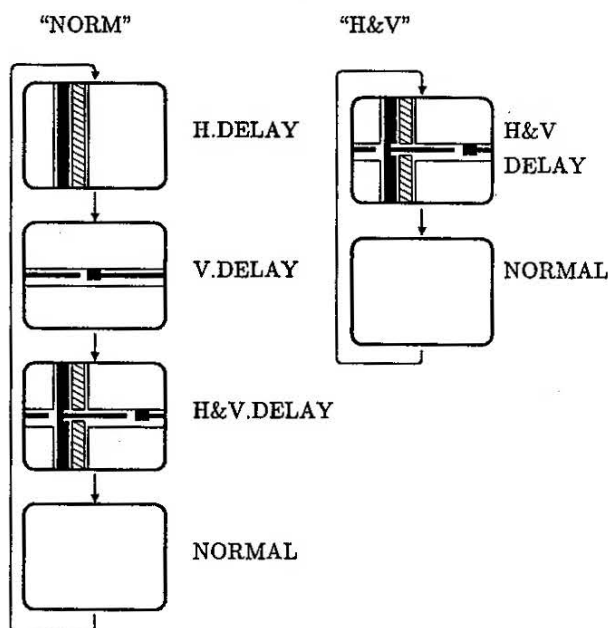
Pressing this switch and holding it for 2-3 seconds makes the LED blink and partitions the screen upper and lower, with the same picture on upper in color and on lower in black and white. The screen split position can be adjusted with the method given in 5-6.(2).

⑦ APT Switch

Pressing this switch lights up the LED and applies the aperture.

⑧ DELAY Switch

When this switch is pressed, the delay state is changed with the mode set as in the figure below. For details on the setting method, see 5-6.(6).

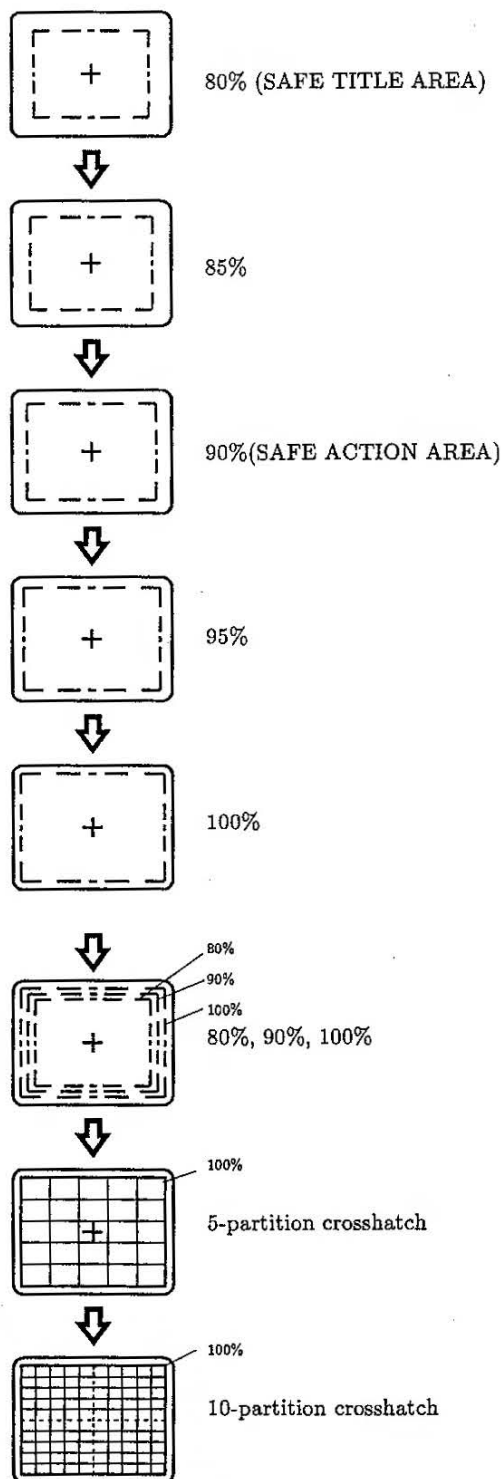


⑨ SCAN Switch

4:3 (UNDER) scan, 4:3 (NORMAL) scan and 16:9 scan can be switched with this switch.

⑩ **SAFE TITLE** Switch

When this switch is pressed, a frame from 80% to 100% in intervals of 5% can be output and at the same time three frames of 80%, 90%, and 100% can be output on the screen. 5-partition cross hatch and 10-partition cross hatch can also be output.



- The 80% frame expresses the safe title area of the SMPTE recommendations and the 90% frame displays the safe action area.
- Since the 95% frame is the same size as for over scan, you can set the over scan size if you adjust the screen size so that the escutcheon frame and the 95% frame match.
- The 100% frame can be used for H. phase adjustment. For details on the adjustment method, see 5-4.(8). You can also visually check the video blanking width and check the input signal video phases.
- 5-partition cross hatch and 10-partition cross hatch can be used to set the position of the camera location.

⑪ **COMB** Switch

For composite video input, when the NTSC decoder board is selected(NTSC mode), pressing this switch lights up the LED and uses a CCD comb filter circuit for luminance signal and chroma signal separation. When the LED is off, a trap circuit is used.

The CCD comb filter circuit eliminates the drop in resolution when the color signals are reproduced.

When the optional Faroudja comb decoder board (DE305) is used, this comb circuit is always used and separation does not switch to the trap circuit.

⑫ **S-PAL** Switch

For composite video input, when the PAL-B decoder board is selected(function does not work when the PAL/SECAM decoder board or PAL-M decoder board is selected), pressing this switch lights up the LED and makes the demodulation simple PAL. When the LED is off, the demodulation is delay PAL.

Delay PAL uses a 1H delay line, but simple PAL does not use a delay line. It simply converts the modulation output to light as is. In other words, it uses the average effect of the human eye and alternates every other scanning line between + and - to eliminate the color phase error.

⑬ **SCREENS** Switch

These switches switch the R/G/B screens on/off. There are two modes for the **SCREENS** switches. For details on the setting method, see 5-6.(6). When all the screens are "ON", the LEDs are all "OFF".

Caution

When the SCREENS LEDs blink, this warns that the memory backup battery is running low.

Replace it with a new 3V lithium battery. For details on how to do this, refer to the service manual.

⑭ **HUE** Manual Control

This is the manual control for the one-piece manual/preset switch. Pressing it lights up the LED and extends the knob. In this state, the hue can be changed. For PAL-B format demodulation, when the **S-PAL** switch is not "ON", this function does not work. (However, this is only for composite signals.)

Note: When a PAL/SECAM decoder or PAL-M decoder board is selected, this function does not work.

⑮ **CHROMA** Manual Control

This is the manual control for the one-piece manual/preset switch. Pressing it lights up the LED and extends the knob. In this state, the chroma can be changed.

⑯ **BRIGHT** Manual Control

This is the manual control for the one-piece manual/preset switch. Pressing it lights up the LED and extends the knob. In this state, the brightness can be changed.

The brightness for the delay state is adjusted with Menu Item 2.4. (See 5-6.(4).)

⑰ **CONT** Manual Control

This is the manual control for the one-piece manual/preset switch. Pressing it lights up the LED and extends the knob. In this state, the contrast can be changed.

⑱ **FILE LED**

This LED shows the state of the FILE switch discussed in 5-3.(2).

(2) Names and Functions of the Pull-out Panel Control Section

You can pull out the pull-out panel by pressing the front panel.

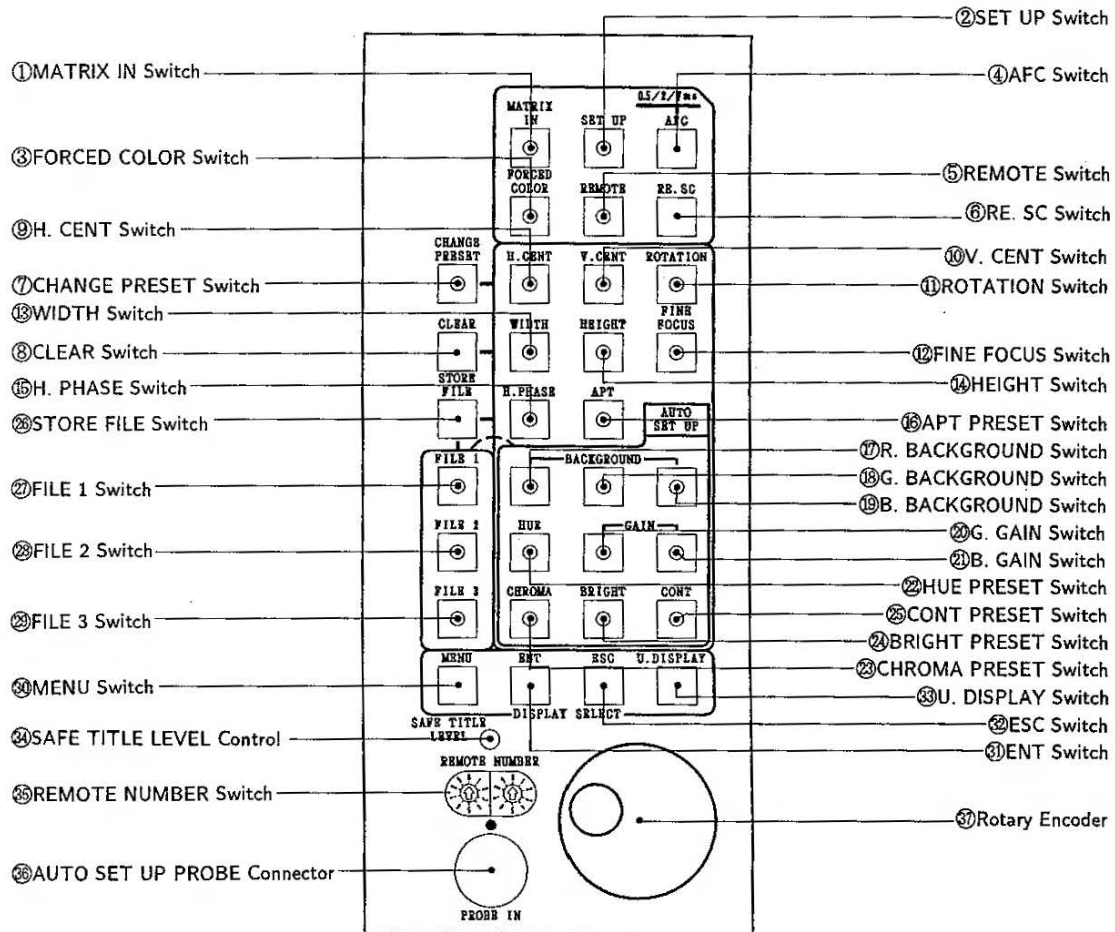


Fig. 5-3-3. TM14-20RH/RP Pull-out Panel Control Section

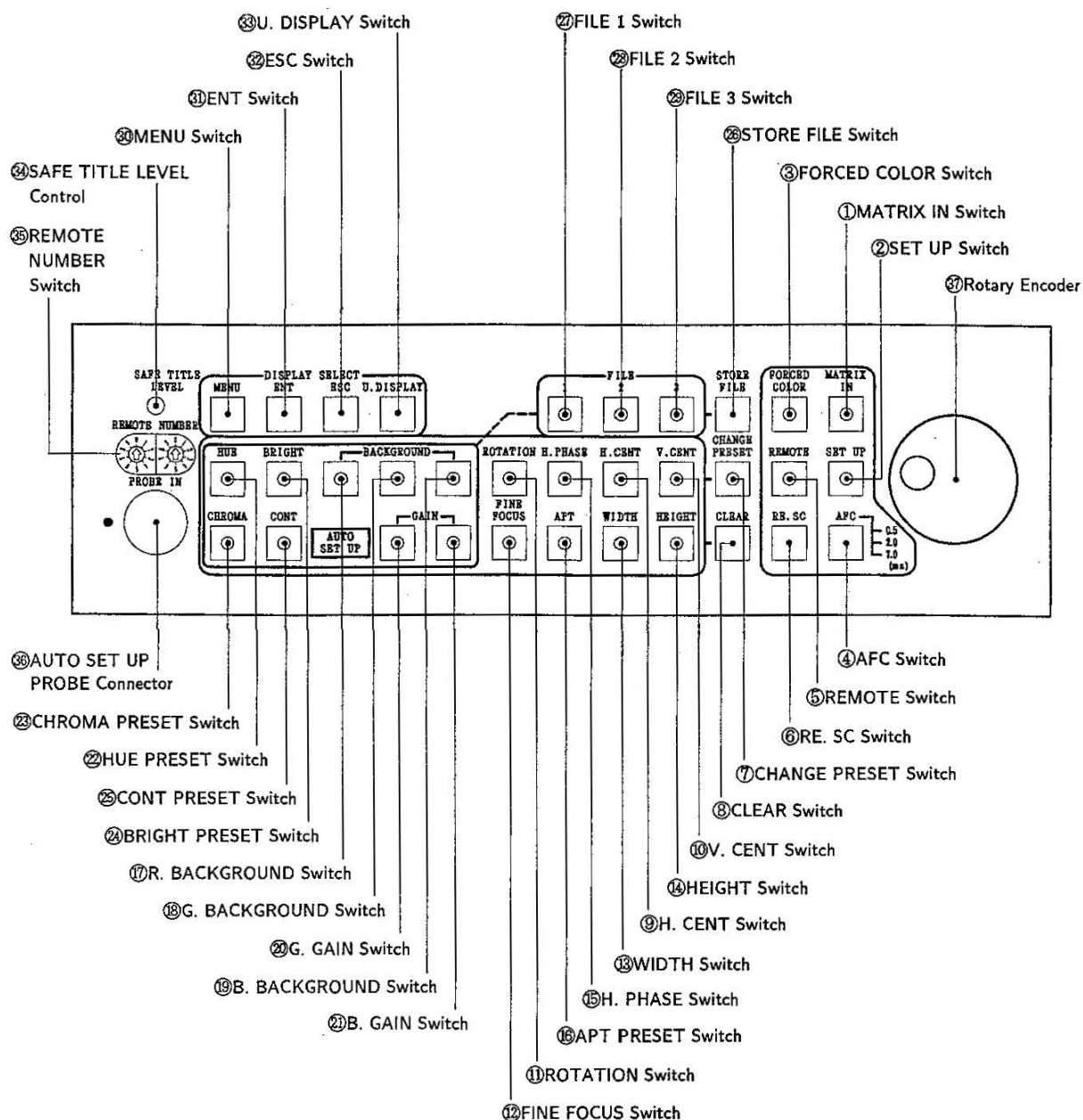


Fig. 5-3-4. TM20-20RH/RP, TM20-30RH/RP Pull-out Panel Control Section

The distribution of switches, etc. varies between Fig. 5-3-3 and Fig. 5-3-4, however the functions and method of operation are the same in both cases.

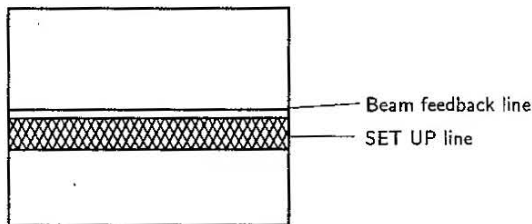
① MATRIX IN Switch

This switch changes the matrix ratio for the luminance signal and the color difference signals.

When the LED is off, the regular matrix is used and when the LED is on, the home receiver matrix is used.

② SET UP Switch

This is the OPERATE/SET UP switch. This switch is set to the OPERATE side(LED off) for ordinary operation and to the SET UP side(LED on) to reduce the vertical deflection and adjust the white balance (R, G, B, background) . For details, see 5-4.(1).



③ FORCED COLOR Switch

This is the AUTO COLOR/FORCED COLOR switch. For component signal (RGB, YP_BP_R, D1) input, this circuit does not work.

AUTO COLOR

The operation of the color circuit changes automatically according to whether or not there is a burst for the composite input signal.

FORCED COLOR

The color circuit is forced into operation even when there is not a burst for the composite input signal.

④ AFC Switch

This is the AFC 0.5/2/7 ms switch. Pressing this switch switches the time constant to the next one in the sequence 0.5, 2, 7 ms (shown on screen). Here is how to select the best time constant.

- 0.5 msec Select this time constant when simple VCR or other sync signals are unstable.
- 2 msec Select this time constant for ordinary usage.
- 7 msec Select this time constant when the camera line out, broadcast VCR or other sync signal is stable.

⑤ REMOTE Switch

This is the REMOTE operation select switch . When this switch is pressed, the screen becomes like that in the figure below.

- For remote operation with the parallel connector (standard equipment 10-pin round connector), with the screen as shown in the figure below, use the rotary encoder to move the cursor to "2. PARALLEL", then press the REMOTE switch (LED Lights up).

For details on the connection, see 4-2.

- For serial remote operation (with the optional BNC connector), with the screen as shown in the figure below, use the rotary encoder to move the cursor to "3. SERIAL", then press the REMOTE switch (LED Lights up). To conduct serial operation, the optional SPECIAL FUNCTION MODULE (SF301) and SERIAL REMOTE CONTROLLER (SRC-301) are required.

Thereby the remote operation is possible with one BNC cable. If the cable is looped-through, a lot of monitors can be operated remotely.

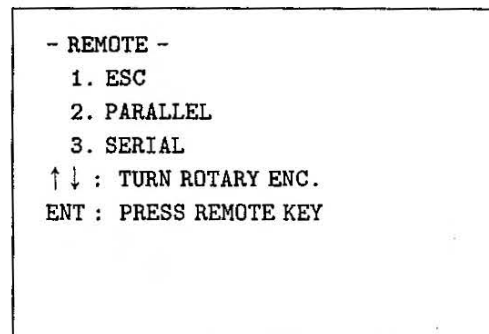
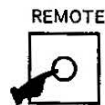
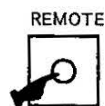


Fig. 5-3-5.



When the REMOTE switch is pressed, the menu above is appeared. Use the rotary encoder to select items from the menu on the screen.

When the REMOTE switch is pressed again, the LED lights up and control switches to the selected remote operation.

Pressing the REMOTE switch one more time puts out the LED and ends remote operation control.

⑥ **RE. SC** Switch (Only when NTSC decoder used.)

This circuit does not function for component signal (RGB, YPbPr, D1) input.

This is the residual subcarrier on/off switch. It checks whether the subcarrier is leaking into the input signal. While watching the screen, press this switch. If the phase (hue) changes, the subcarrier is leaking into the return line section. When you release the switch, this function automatically goes off.

For concrete usage methods for Switches ⑦-⑨, see the usage examples in 5-5.

⑦ **CHANGE PRESET** Switch

Press this switch to change preset data items or to store them into memory. When this switch is pressed, all the preset switches start to blink, but under the following conditions, some switches do not blink.

- When the front panel **APT** switch is "OFF"
⇒ To change APT preset data, have the **APT** switch "ON".
- When a front panel **HUE**, **CHROMA**, **BRIGHT**, or **CONT** MANUAL/PRESET switch is set to "MANUAL"
⇒ To change the preset data for any of these switches, have it set to "PRESET".
- When demodulating PAL-B signals with the PAL-B decoder board, if the **S-PAL** switch is "OFF" (delay PAL)
⇒ Switch "ON" the **S-PAL** switch. (When changing HUE preset data.)

⑧ **CLEAR** Switch

While changing any preset data (before you have stored it into memory), you can press this switch to return to the data you had before you changed it and clear the new change data.

This switch enables you to temporarily change preset data without changing the data stored in memory.

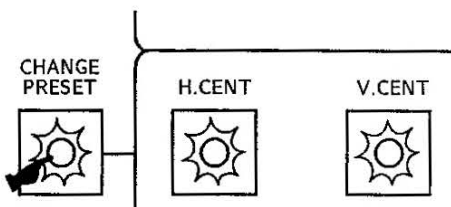
⑨ **H. CENT** Switch

This switch adjusts the horizontal position of the effective screen. The adjustment method is explained in 5-4.(7).

Operating Process:

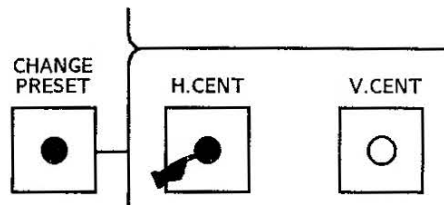
Operation is the same for the TM14-20RH/RP, TM 20-20RH/RP, and TM20-30RH/RP, so we will just explain for the TM14-20RH/RP.

(I)



Press the **CHANGE PRESET** switch. The preset switches all blink.

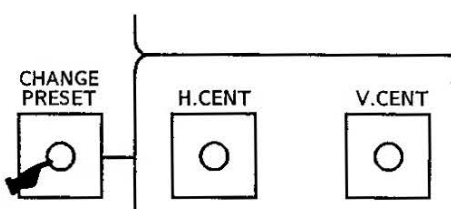
(II)



Press the **H. CENT** switch.

When you do, just the **CHANGE PRESET** and **H.CENT** switches light up and the others go out. You can change the horizontal centering with the rotary encoder.

(III)



When you press the lit up **CHANGE PRESET** switch, it goes out and at that moment, the changed data is stored into memory.

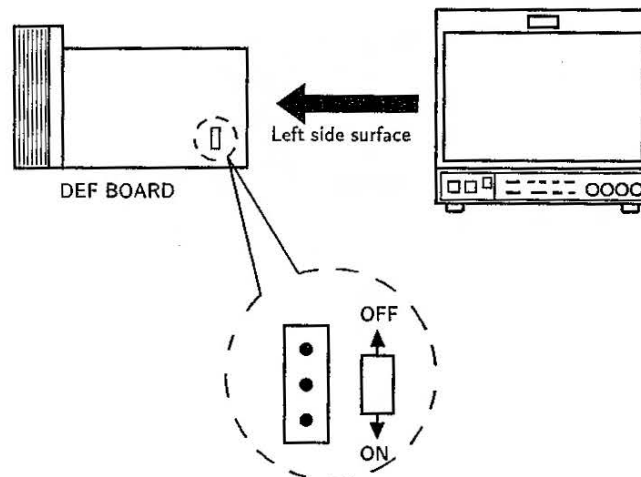
⑩ **V. CENT** Switch

This switch adjusts the vertical position of the effective screen. The operation procedure is the same as for ⑨. The adjustment method is explained in 5-4.(7).

⑪ **ROTATION** Switch

This switch corrects the purity from the influence of geomagnetism after the monitor has been rotated. The operation procedure is the same as for ⑨. The adjustment method is explained in 5-4.(4).

When using the monitor in a situation where it is constantly changing its direction, for example in a relay vehicle, set the L bit connector on the DEF board "OFF" so the **ROTATION** switch goes not work. The monitor is shipped from the factor with this connector set "ON".



⑫ **FINE FOCUS** Switch

This is the switch for fine adjustment of the focus. The operation procedure is the same as for ⑨. The adjustment method is explained in 5-4.(3).

visually check phase displacement of video signals. If you set the H.PHASE separately for each channel, then you can set the picture at the center of the screen for all channels. For details of the adjustment method, see 5-4.(8).

⑬ **WIDTH** Switch

This switch adjusts the width of the effective screen. The operation procedure is the same as for ⑨. Since the memories concerning the WIDTH data are provided for three kinds of size (16:9 under, 4:3 under and 4:3 normal scan respectively) changed by the **SCAN** switch on the front panel, set this data linked with the **SCAN** switch. For concrete details of the operation, see 5-5.(1), Example 1.

⑮ **APT PRESET** Switch

This switch adjusts the aperture. This switch does not work unless you have already set the **APT** switch on the front panel "ON" (and switched "ON" its LED). The operation procedure is the same as for ⑨.

⑭ **HEIGHT** Switch

This switch adjusts the height of the effective screen. The operation procedure is the same as for ⑨. The same as for the **WIDTH** switch ⑬, there is memory for height data for three types of scanning size. For concrete details of the operation, see 5-5.(1), Example 1.

⑰ **R. BACKGROUND** Switch

This switch adjusts the low light white balance. The operation procedure is the same as for ⑨. For details of the adjustment method, see 5-4.(1).

⑱ **G. BACKGROUND** Switch

Same as switch ⑰.

⑲ **B. BACKGROUND** Switch

Same as switch ⑰.

⑮ **H. PHASE** Switch

This switch adjusts the video horizontal phase. The operation procedure is the same as for ⑨. You can select whether to use the same H.PHASE for all the channels or set it separately for each channel. (See 5-6.(6).)

If you set the same H. PHASE for all channels and output the 100% safe title frame, then you can

⑳ **G. GAIN** Switch

This switch adjusts the high light white balance. The operation procedure is the same as for ⑨. For details of the adjustment method, see 5-4.(1).

㉑ **B. GAIN** Switch

Same as switch ㉑.

②② HUE PRESET Switch

This switch adjusts the preset hue value. When operating in PAL-B, this switch does not work unless the front panel **S-PAL** switch is "ON" (and its LED is lit up). The operation procedure is the same as for ⑨. For details of the adjustment method, see 5-4.(2).

②③ CHROMA PRESET Switch

This switch adjusts the preset chroma value. The operation procedure is the same as for ⑨. For details of the adjustment method, see 5-4.(2).

Setting of YP_BP_R CHROMA PRESET Data

- Since the CHROMA PRESET data setting can be made exclusively for YP_BP_R separately from the normal CHROMA data setting, it allows compatibility with various sorts of VTR standards. The exclusive CHROMA data for YP_BP_R of MODE 1 to MODE 3 can be stored into FILE 1 to FILE 3 similarly to the normal CHROMA data.
- By setting the "YP_BP_R MODE" of MENU Item 3 (See 5-6(5)), chroma data of various types of standards can be output.

"MODE 1" : SMPTE · M II · N10

(Factory setting values)

"MODE 2" : BETA (Factory setting values)

"MODE 3" : USER (Exclusive user data)

In MODE1, and MODE2, the chroma preset data corresponding to the signal input level described in 3-3(1) is memorized.

②④ BRIGHT PRESET Switch

This switch adjusts the preset brightness value. This switch does not work in delay state. Also, if this **BRIGHT** preset switch is "ON" (and its LED lit up), if you switch into delay state, this switch is automatically switched off (and its LED goes out). The operation procedure is the same as for ⑨. For details on the adjustment method, see 5-4.(5).

②⑤ CONT PRESET Switch

This switch adjusts the preset contrast value. The operation procedure is the same as for ⑨. For details on the adjustment method, see 5-4.(6).

②⑥ STORE FILE Switch

This switch stores the data for Files 1-3. When you press this switch, **FILE1** - **FILE3** blink. Pressing the key for the file into which you want to store the data, the FILE selected lights up and the data is stored into it. For details on the operation procedure, see Example 1 and Example 2 in 5-5.(2).

②⑦ FILE 1 Switch

To output the data stored in File1 (preset data ①⑦ - ②⑤) or to store data into File 1, switch this switch "ON". For details on the operation procedure, see Example 1 and Example 2 in 5-5.(2).

②⑧ FILE 2 Switch

Same as switch ②⑦.

②⑨ FILE 3 Switch

Same as switch ②⑦.

③① MENU Switch

This switch calls out the various menus. For details, see 5-6.

③② ENT Switch

This switch is for menu operation. For details, see 5-6.

③③ ESC Switch

This switch is for menu operation. For details, see 5-6.

③④ U. DISPLAY Switch

This switch displays the titles for the channels.

For details on the user display setting, see 5-6.(3).

For details on the user display indicating method, see 5-6.(6).

③⑤ SAFE TITLE LEVEL Control

This control adjusts the safe title brightness.

③⑥ REMOTE NUMBER Switch

When operating the optional RCT-20 infrared remote controller or the optional serial remote, setting this number for each monitor makes it possible to distinguish remote control for each monitor.

For "00", there is no remote control. Setting this number to numbers from "01" to "99" enables you to operate up to 99 monitors individually.

The unit is shipped with this number set to "00".

③⑦ AUTO SET UP PROBE Connector

When adjusting the hue, chroma, and white balance automatically with the optional ASP-15 auto set up probe, connect the probe to this connector.

③⑧ Rotary Encoder

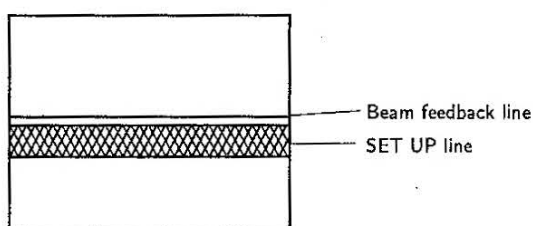
The rotary encoder is used for such tasks as changing the pull-out panel preset data and selecting menu and remote modes.

5-4. Adjustment Procedure

(1) White Balance Adjustment

The white balance can be adjusted automatically by using the optional ASP-15 auto set up probe. When adjusting manually, use the procedure below. You can also adjust with the optional RCT-20 infrared remote controller.

- ① As video signals, input color bar signals or select the built-in TEST signals (step wave with plug).
- ② For color bar signals, set the **MONO** switch "ON" for a black and white picture.
- ③ Switch "ON" the **SET UP** switch and set as in the figure below.



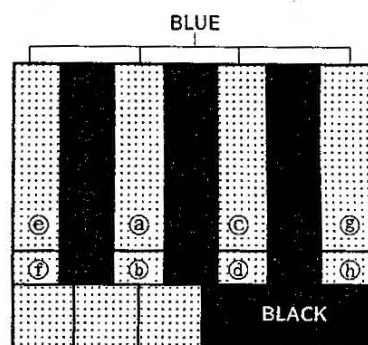
- ④ Switch "ON" the **R.SCREEN** switch. (If the **SCREENS** switch is set to MODE2, switch "OFF" just this switch.) Adjust the R.BACKGROUND so that you can barely see or barely can not see the SET UP lines.
- ⑤ Switch "ON" the **G.SCREEN** switch. (If the **SCREENS** switch is set to MODE2, switch "OFF" just this switch.) Adjust the G.BACKGROUND so that you can barely see or barely can not see the SET UP lines.
- ⑥ Switch "ON" the **B.SCREEN** switch. (If the **SCREENS** switch is set to MODE2, switch "OFF" just this switch.) Adjust the B.BACKGROUND so that you can barely see or barely can not see the SET UP lines.
- ⑦ If you can not align any one of the colors, R, G, or B, move the screen control (See 7.) on the CRT socket board slightly.
- ⑧ Return the **SCREENS** switch to its original setting and switch "OFF" the **SET UP** switch.
At this point, the dark sections of the color bar (step wave with plug) should be the same for R, G, and B.
- ⑨ While watching the bright sections of the color bar (step wave with plug), adjust the G.GAIN and B. GAIN so that the bright sections are white.
- ⑩ Adjust the bright sections with GAIN and the dark sections with BACKGROUND over and over until the color temperature is the same from the dark sections to the bright sections.
- ⑪ This completes the white balance adjustment.

(2) Color Balance Adjustment

The color balance can be adjusted automatically by using the optional ASP-15 auto set up probe. When adjusting manually, use the procedure below. You can also adjust with the optional RCT-20 infrared remote controller.

<Operating with NTSC>

- ① Input 75% color bar signals (SMPTE) as the video signals.
- ② Switch "ON" the **B.SCREEN** switch to obtain just the blue signal.

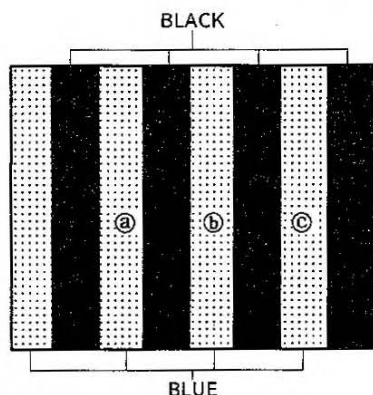


SMPTE color bar

- ③ Lower the brightness with the **BRIGHT** manual control until you can barely see the blue signal.
- ④ Switch "ON" the **HUE** preset switch, then adjust the hue so that a - d in the above figure are all the same brightness. If you can not obtain the same brightness, set the closest you can, then proceed to Step ⑤.
- ⑤ Switch "ON" the **CHROMA** preset switch, adjust the chroma so that e - h in the above figure are all the same brightness. If you can not obtain the same brightness, set the closest you can, then return to Step ④.
- ⑥ Repeat Steps ④ and ⑤ until a - h are all the same brightness. This completes the color balance adjustment.

<Operating with PAL>

- ① Input 75% color bar signals as the video signals.
- ② Switch "ON" the **B.SCREEN** switch to obtain just the blue signal.
- ③ Lower the brightness with the **BRIGHT** manual control until you can barely see the blue signal.



- ④ Switch "ON" the **CHROMA** preset switch, adjust the chroma so that ② - ③ in the above figure are all the same brightness.

<Operating with YPbPr signals>

Apart from the composite signal chroma preset data, you can adjust chroma preset data specially for YPbPr.

- ① Set the input channel to "AUX", then set the "RGB/YPbPr" mode on Menu 3 to "YPbPr". (See 5-6.(5).)
- ② Of the "YPbPr MODE" on Menu 3, select the mode you want to change.
- ③ Lower the brightness with the **BRIGHT** manual control until you can barely see the blue signal.
- ④ Switch "ON" the **CHROMA** preset switch, adjust the chroma so that ② - ③ in the above figure are all the same brightness, the same as for the figure above for the PAL adjustment.

* When using both NTSC and PAL, storing the hue preset data and chroma preset data into files, saves time in adjusting the color balance when you switch from one format to the other.

(3) Focus Adjustment :

- ① Select the character signal of the TEST signal.
- ② Switch the **FINE FOCUS** switch "ON" and adjust for the optimum focus. If you can not focus properly, set the FINE FOCUS level to 50%, then move on to the next item.
- ③ Roughly adjust the focus with the **FOCUS** control in the focus block within the monitor. (See 7.)
- ④ Finely adjust the focus in the same manner as in ②.

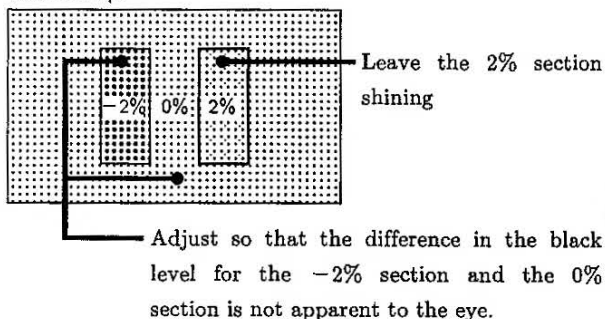
(4) ROTATION Adjustment :

- ① Select the flat field signal of the TEST signal.
- ② Press the **DEGAUSS** switch to discharge the charged shadow mask.
- ③ Press the **TEST** switch and select the flat field signal.
- ④ Switch "ON" only the **R.SCREEN** switch. (When the **SCREENS** switch is set to MODE2, switch "OFF" only this switch.)
- ⑤ Switch "ON" the **ROTATION** switch and adjust for the optimum purity.
- ⑥ Verify the G and B purity too.

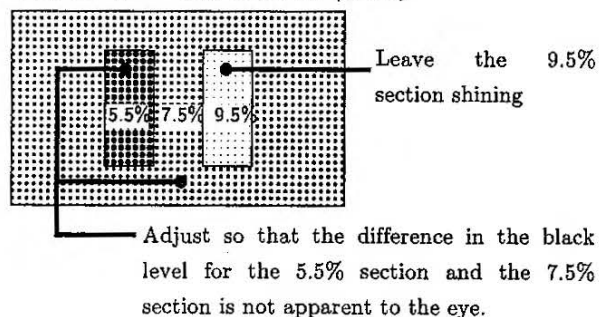
(5) Brightness Adjustment :

- ① Set the V/VS select of menu in conformity to the input signal. Refer to Section 5-6.(4) for details on setting method.
 V set up level of the input signal: 0%
 VS set up level of the input signal: 7.5%
- ② Select the step wave with pluge of the TEST signal. For 525 lines(60Hz), select the step wave with pluge for the input signal set up level of either 0% or 7.5%.
- ③ Adjust the brightness so that the pluge signal section looks like the figure below.

<0% set up>



<7.5% set up> ... only when 525 (60 Hz)

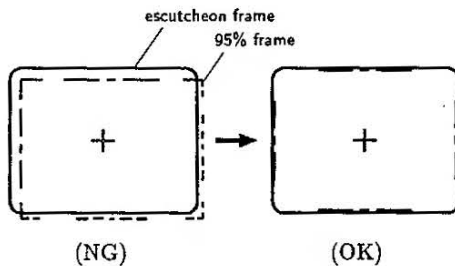


(6) Contrast Adjustment :

- ① Before carrying out this adjustment, adjust the white balance (1) and brightness (5).
- ② Output the window signal of the TEST signal.
- ③ Place a luminance meter at the window section and adjust the contrast for a luminance of 35 ft-L (120 Nit).

(7) H.CENT and V.CENT Adjustment :

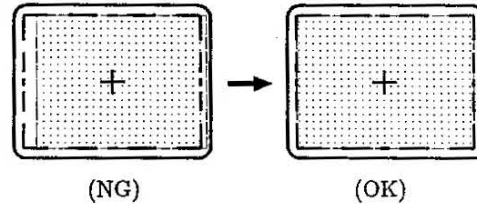
- ① Set to 4:3 (UNDER) scan with the **SCAN** switch on the front panel, and make sure that the frame of 100% SAFE TITLE is incorporated with the image frame, as illustrated in (8) ⑦. If not, first adjust H.PHASE of (8).
- ② Set the front panel **SCAN** switch to 4 : 3 (NORMAL) SCAN.
- ③ Output a 95% frame with the front panel **SAFE TITLE** switch.
At this time, set the SAFE TITLE phase to the "REFERENCE" mode. (Refer to Section 5-6.(1).)
- ④ Adjust the H.CENT and V.CENT so that the 95% frame and the escutcheon frame line up with each other.



(8) H.PHASE Adjustment :

Setting the same data for the H.PHASE of all the input channels

- ① Set the SAFE TITLE PHASE to "REFERENCE" mode. (See 5-6.(1).)
- ② Output a 100% frame with the front panel **SAFE TITLE** switch.
- ③ Set the front panel **SCAN** switch to UNDER SCAN.
- ④ Set the MENU2 H.PHASE mode to "ALL".
(See 5-6.(6).)
- ⑤ Select the channel that will be the standard.
- ⑥ Switch "ON" the **H.PHASE** switch.
- ⑦ Adjust the H.PHASE so the picture lines up with the 100% frame.



- ⑧ With the monitor in this state, if you switch to another channel, you can visually check the phase displacement.

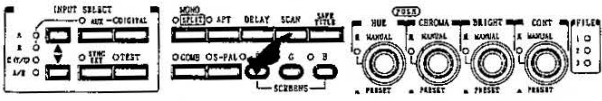
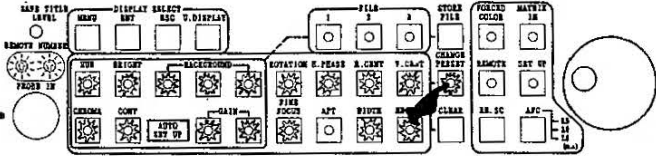
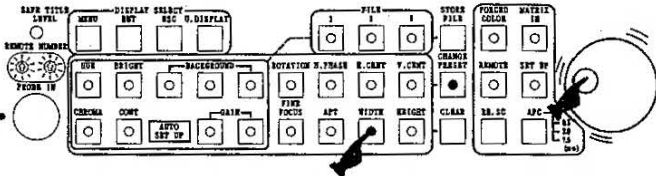
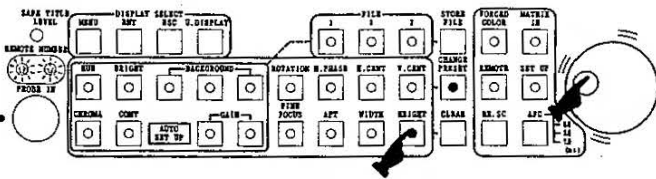
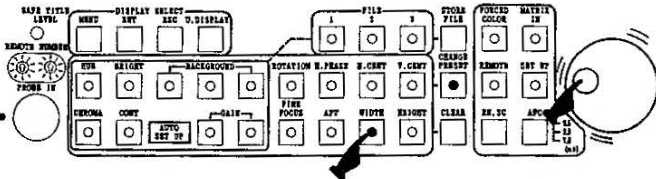
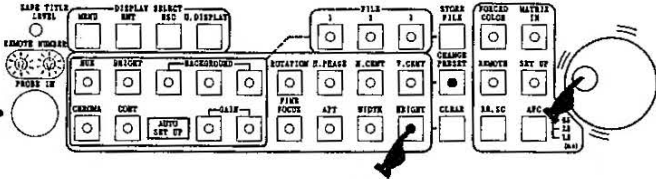
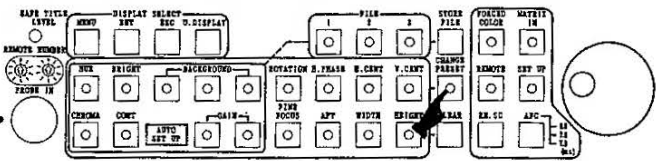
Setting the H.PHASE separately for each input channel.

- ① Carry out Steps ①-③ above.
- ② Set the MENU2 H.PHASE mode to "CH".
(See 5-6.(6).)
- ③ Select the channel you want to set.
- ④ Switch "ON" the **H.PHASE** switch.
- ⑤ Adjust the H.PHASE as above.
- ⑥ Select the next channel you want to set and adjust its H.PHASE.
- ⑦ Switching between channels and adjusting their H. PHASE, store the data for each channel into memory.
- ⑧ With the monitor in this state, you can set the picture for each channel to the center of the screen.

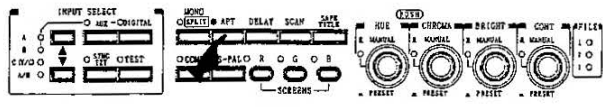
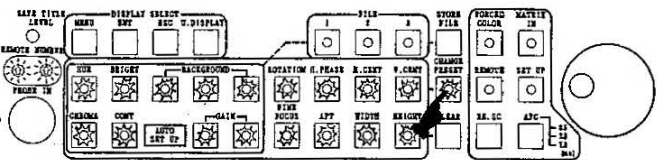
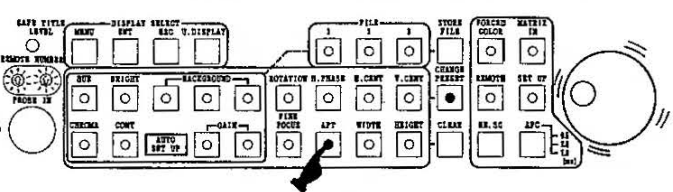
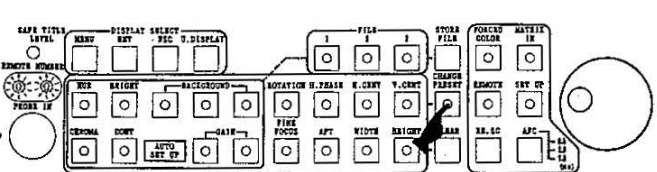
5-5. Memory Storage and Change

(1) Changing PRESET Data

[Example 1] Changing Screen NORMAL SCAN and UNDER SCAN

Order	Operation	Explanation
1		When adjusting from the normal scan screen size, first press the SCAN switch to output the "NORMAL SCAN" on the screen.
2		Press the CHANGE PRESET switch. Each preset switch blinks. However, the APT preset switch does not blink unless the front panel APT switch is "ON".
3		Press the WIDTH switch and change the screen width with the rotary encoder.
4		Press the HEIGHT switch and change the screen height with the rotary encoder.
5		Next you adjust the under scan screen size, so press the SCAN switch to output the "UNDER SCAN" on the screen.
6		Press the WIDTH switch and change the screen width with the rotary encoder.
7		Press the HEIGHT switch and change the height of the screen with the rotary encoder. If you want to change the over scan screen size, do so as in Steps 5-7.
8		When you have finished changing the data, press the CHANGE PRESET switch. The new data is stored into memory when the LED goes out. If you press the CLEAR switch anytime before you press the CHANGE PRESET switch, this throws out the new data and returns the system to the data you had before you started the changes.

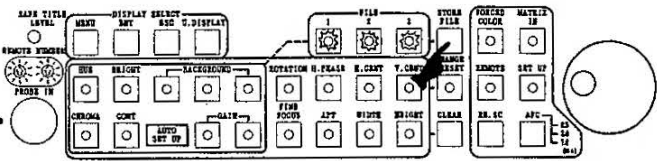
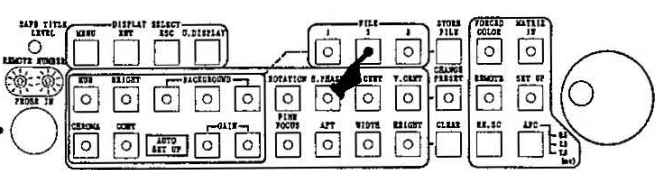
[Example 2] Changing APT

Order	Operation	Explanation
1		Turn "ON" the APT switch.
2		Press the CHANGE PRESET switch and all preset switches will blink.
3		Press the APT preset switch and the aperture preset data can be changed with the rotary encoder.
4		When you have finished changing the data, press the CHANGE PRESET switch. The new data is stored into memory when the LED goes out. If you press the CLEAR switch anytime before you press the CHANGE PRESET switch, this throws out the new data and returns the system to the data you had before you started the changes.

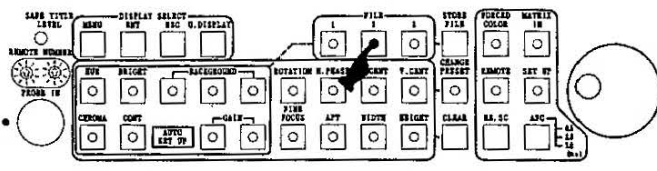
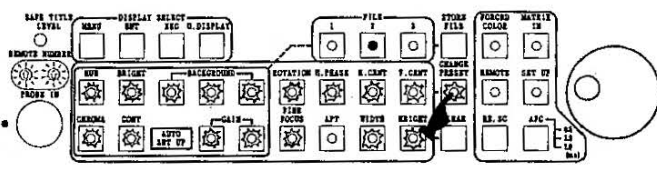
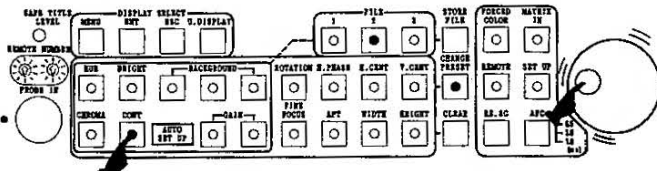
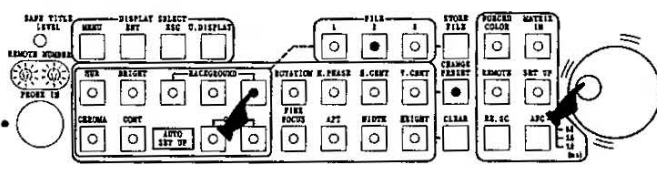
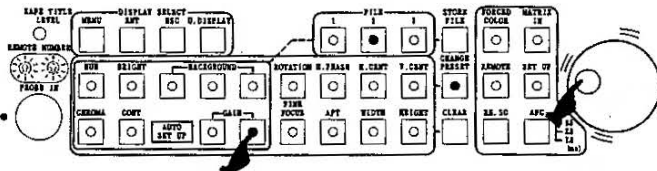
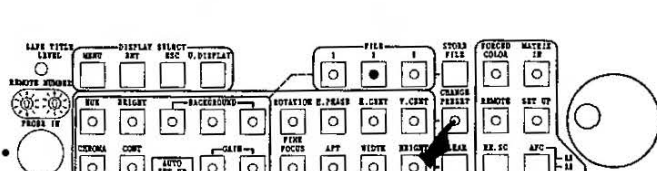
(2) Changing FILE PRESET Data

Items registered in the file memory : HUE PRESET, CHROMA PRESET, BRIGHTNESS PRESET, CONTRAST PRESET, R, G, and B BACKGROUNDS, G and B GAINS

[Example 1] Registering Conditions Presently Displayed on the Screen in FILE 2 Memory

Order	Operation	Explanation
1		Press the STORE FILE switch and FILE 1 to FILE 3 switches will blink.
2		Press the FILE 2 switch. The new data is stored into memory when the LED goes out.

[Example 2] Changing CONTRAST PRESET, B. BACKGROUND, and B. GAIN Registered in the FILE 2 Memory

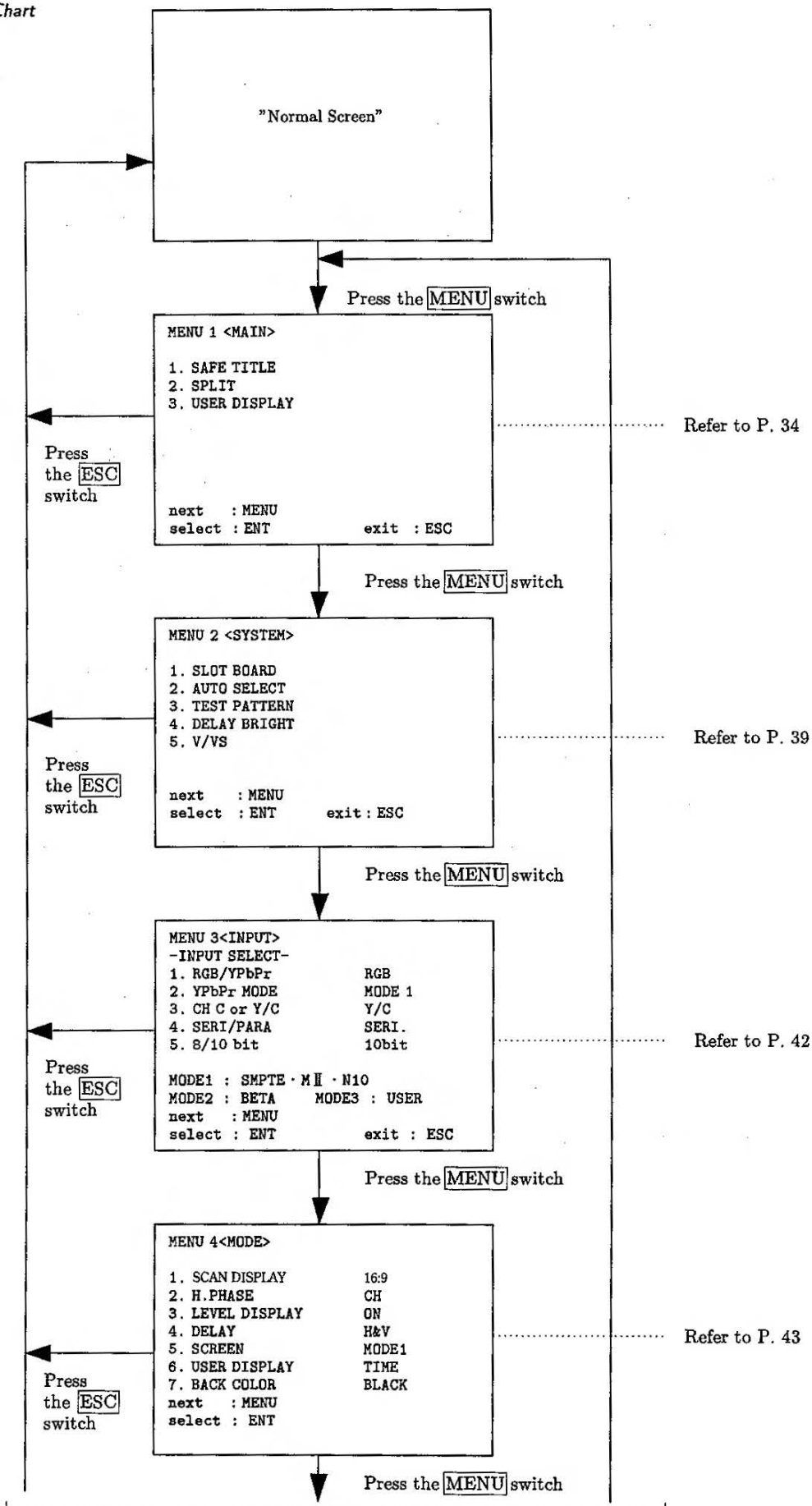
Order	Operation	Explanation
1		Press the FILE 2 switch, and the PRESET data stored in FILE 2 will be output.
2		Press the CHANGE PRESET switch and all preset switches will blink. However, the APT preset switch does not blink unless the front panel APT switch is "ON".
3		Press the CONT preset switch and change the contrast preset data with the rotary encoder.
4		Press the B. BACKGROUND switch and change the B.background with the rotary encoder.
5		Press the B. GAIN switch and change the B.gain with the rotary encoder.
6		When you have finished changing the data, press the CHANGE PRESET switch. The new data is stored into memory when the LED goes out. If you press the CLEAR switch anytime before you press the CHANGE PRESET switch, this throws out the new data and returns the system to the data you had before you started the changes.

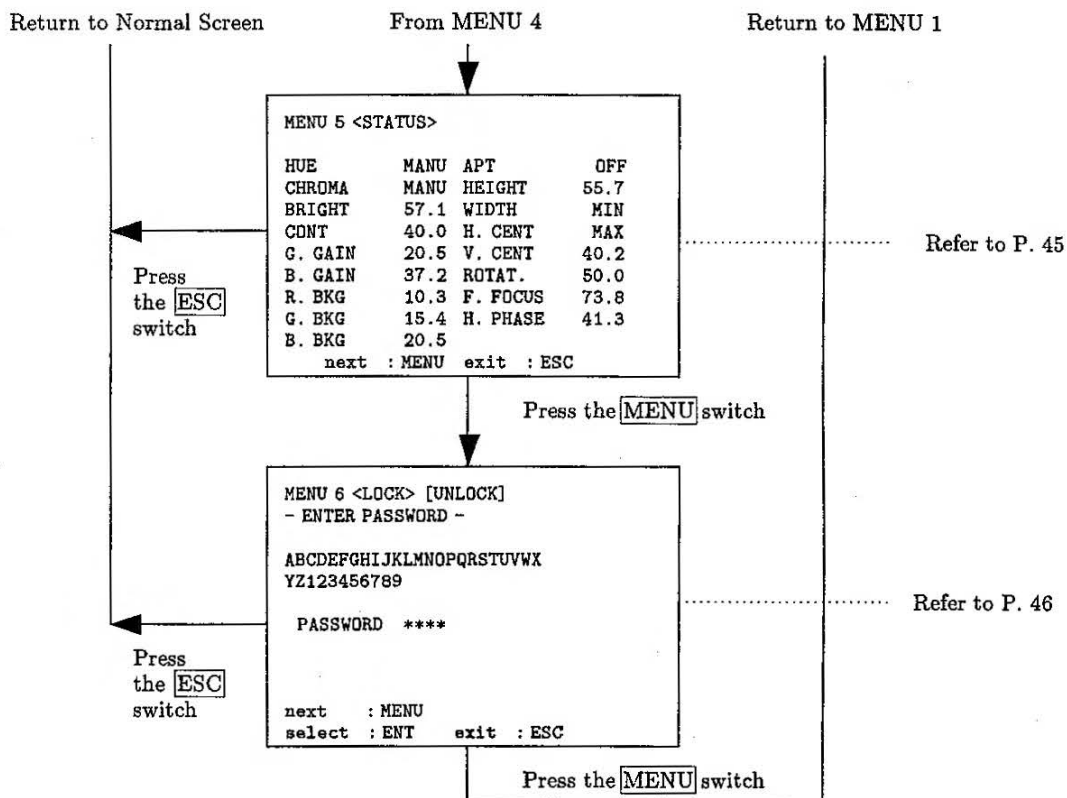
5-6. Menu Operation

MENU LIST			
MENU	MENU 1 <MAIN>	SAFE TITLE	Sets SAFE TITLE color and position 34
		SPLIT — A/B	Sets split position of CH A and CH B 36
		COLOR/MONO ...	Sets split position of COLOR and MONO 37
		USER DISPLAY	Sets channel title color and letters 38
	MENU 2 <SYSTEM>	SLOT BOARD.....	Confirms existence of slot board 39
		AUTO SELECT	Sets scanning format of each input channel 40
		TEST PATTERN	Sets output selection and scanning format 41
		DELAY BRIGHT.....	Sets brightness during DELAYS 41
		V/VS.....	Sets clamp level of each input channel 42
	MENU 3 <INPUT>		Refer to *1 below. 42
	MENU 4 <MODE>	SCAN DISPLAY	Setting of characters displayed on the screen when three types of scan modes are switched 43
		H.PHASE	Sets H. PHASE memory method 43
		LEVEL DISPLAY	Sets output setting of LEVEL DISPLAY 43
		DELAY	Sets DELAY mode setting 44
		SCREEN	Sets SCREEN mode setting 44
		USER DISPLAY	Sets title display method for channels 44
		BACKCOLOR	Sets backcolor for MENU screen 44
	MENU 5 <STATUS>		Displays various types of preset data on the screen 45
	MENU 6 <LOCK>		Sets data LOCK mode using password input 46

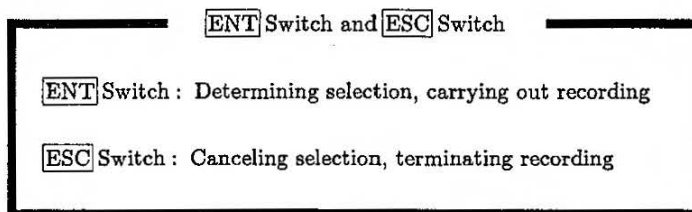
*1 Setting of input format for RGB/YP_BP_R, CH C / Y/C and DIGITAL (8/10bit, SERIAL/PARALLEL)

Menu Flow Chart

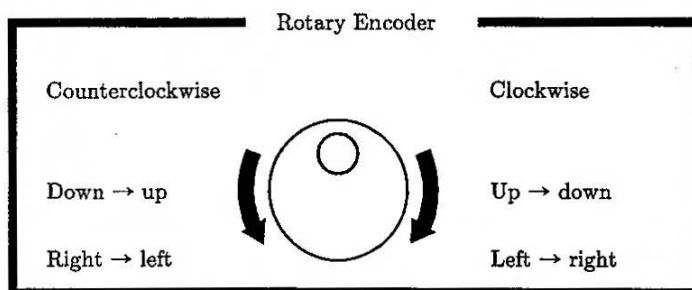




In MENU operation [ENT] and [ESC] switches have the following functions :



Selection in the MENU operation, is carried out using a rotary encoder.
By rotary encoder, the cursor is moved as shown below :



Note) During the menu operation the R, G, and B [SCREEN] switches are automatically turned OFF. When the MENU operation is completed the switches automatically return to their previous condition.

(1) SAFE TITLE

```

MENU 1 <MAIN>

1. SAFE TITLE
2. SPLIT
3. USER DISPLAY

next      : MENU
select    : ENT      exit : ESC
    
```

Select "1. SAFE TITLE".

```

MENU1.1 <SAFE TITLE>

1. COLOR ☐☐☐☐☐☐☐☐
2. MODE REFERENCE
3. VARIABLE PHASE

save      : ENT      exit : ESC
    
```

The frame position should be changed after switching to the "MODE" to "VARIABLE."
Then, select "3.VARIABLE PHASE".

```

SAFE TITLE PHASE

save      : ENT
exit      : ESC
    
```

FUNCTION

- The safe title color and frame position can be set.
- You can set whichever color makes the safe title easier to see on the particular picture.
- If you output 100% safe title and set the mode to "REFERENCE", then you can easily adjust the H.PHASE.

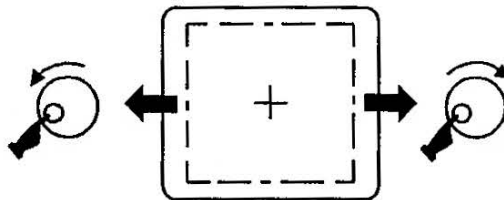
NOTE) The SAFE TITLE is not displayed at the state of "NO SYNC" and at the TEST signal selected.

You can set whichever color makes the safe title easier to see on the particular picture. The color is green when shipping from the factory.

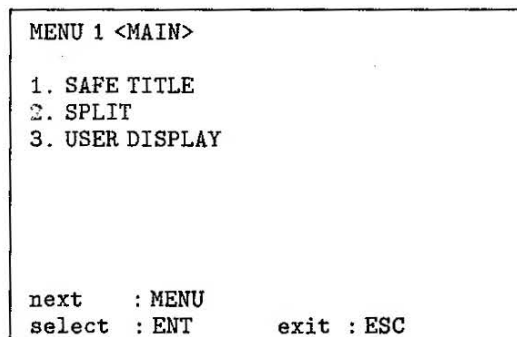
REFERENCE : Factory setting values
(when shipping from the factory)
(Raster center)

VARIABLE : User setting values
The data stored into memory in "3.VARIABLE PHASE" is output.)

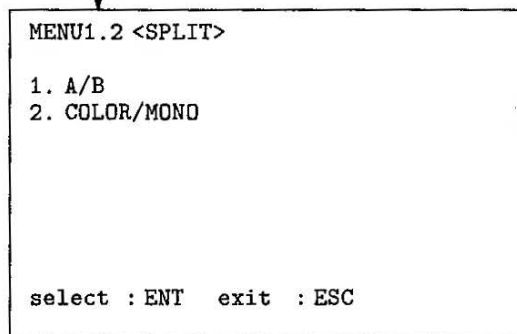
Change SAFE TITLE position.



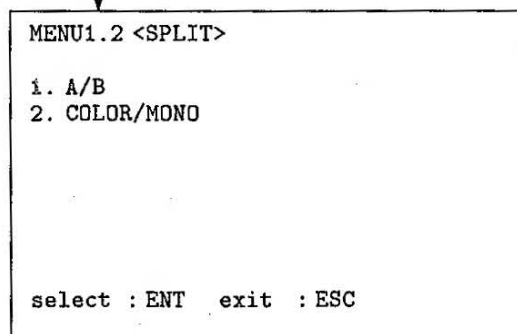
(2) SPLIT



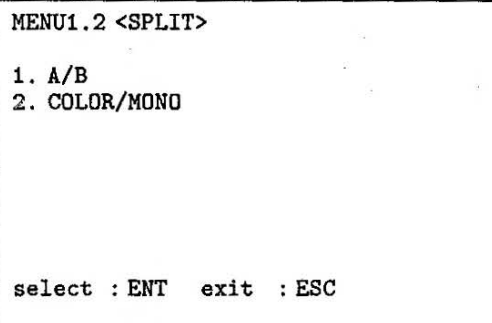
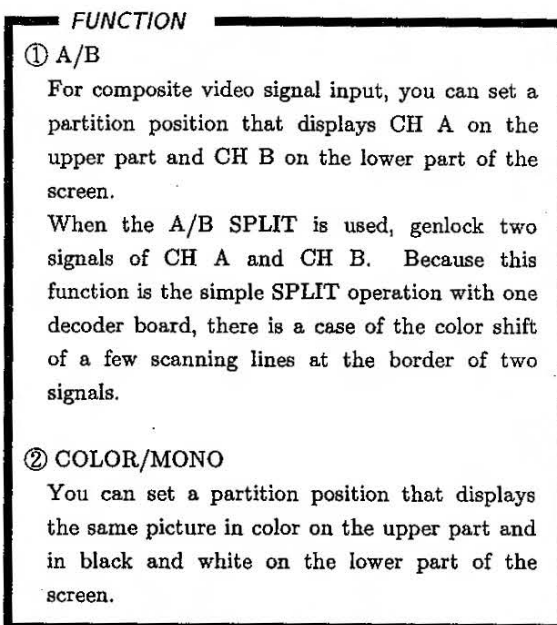
Select "2. SPLIT".



Select "1. A/B" or "2. COLOR/MONO"



Go to (A).



Go to (B).

(A)

Select "1.A/B".

MENU 1.2 <SPLIT>
-A/B SPLIT-
1. VARIABLE PHASE
2. MODE REFERENCE
3. SYNC CH A

select : ENT exit : ESC

The boundary between CH A and CH B is variable.

REFERENCE : Factory setting values
(when shipping from the factory)
(Screen center)

VARIABLE : User setting values

CH A : for sync with the CH A internal sync signal.
(when shipping from the factory)

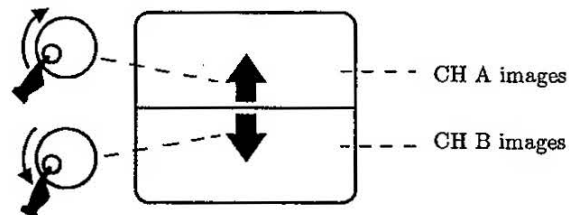
CH B : for sync with the CH B internal sync signal.

When changing the boundary, first change the "MODE" to "VARIABLE".
Select the "1. VARIABLE PHASE"

A/B SPLIT PHASE

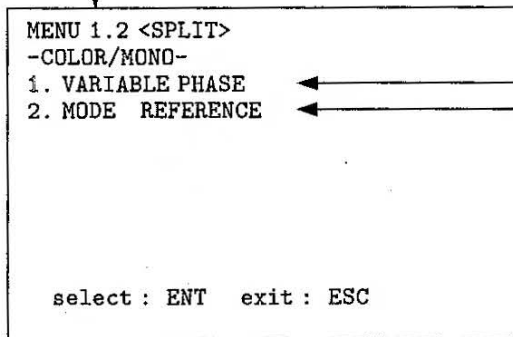
save : ENT
exit : ESC

* You can easily adjust the color, adjust the white balance, and check the video phase for two cameras and two types of video signals.



(B)

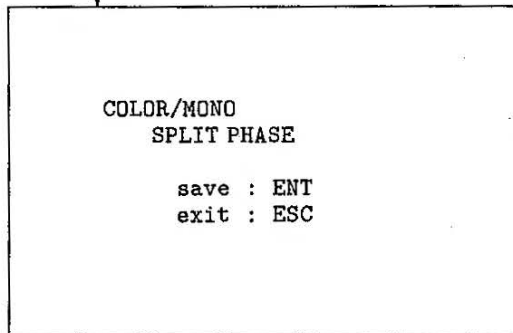
Select "2.COLOR/MONO".



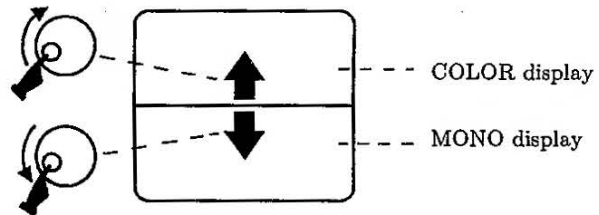
The boundary between color and black and white can be adjusted.

REFERENCE : Factory setting values
(when shipping from the factory)
(Center of screen)
VARIABLE : User setting values

When changing the boundary, first change the "MODE" to "VARIABLE".
Select the "1.VARIABLE PHASE".



* Viewing the same picture in color and black and white at the same time makes it possible to check difference in the video white balance.



(3) USER DISPLAY

```

MENU 1 <MAIN>

1. SAFE TITLE
2. SPLIT
3. USER DISPLAY

next      : MENU
select    : ENT      exit : ESC

```

Select "3. USER DISPLAY"

```

MENU1.3 <USER DISPLAY>
-CHANNEL-
1. CH A          CAMERA 1
2. CH B          CAMERA 2
3. CH C [Y/C]    CAMERA 3
4. CH A/B        SPLIT
5. AUX A         ABCDEFGH
6. AUX B         X Y Z
7. DIGITAL A     Ikegami
8. DIGITAL B     Ikegami
select : ENT      exit : ESC

```

```

*USER DISPLAY*
-WORD SELECT-
  COLOR  □□□□□□ □□
-WORD-
ABCDEF GHIJ KLMNOP QRSTUV WX
YZ1234 5678 9abcde fghijk lm
nopqrstu vwxyz [] *

Selected word  *****

select : ENT      exit : ESC

```

FUNCTION

A title of up to eight characters can be displayed for each channel. In addition to this the color of the characters can also be selected.

By pressing the U.DISPLAY switch on the pull-out panel, the display of the titles set here can be switched ON and OFF.

Note) Set "AUX B" while using the optional DC301 dual component board.

Set "DIGITAL A/B" while using the optional D1 kit (DK301) or optional D2 kit (DK302).

Note) "*" represents a blank space.

If an error is made when setting characters, press the ESC switch and start once again, from the color setting.

※ When shipping from the factory, the color and characters of the USER DISPLAY are not set.

(4) SYSTEM

```

MENU2 <SYSTEM>

1. SLOT BOARD
2. AUTO SELECT
3. TEST PATTERN
4. DELAY BRIGHT
5. V/VS

next      : MENU
select    : ENT      exit : ESC
  
```

Select "1.SLOT BOARD"

```

MENU2.1 <SYSTEM>
-SLOT BOARD-

P/S. DECO          F. DECO
P-M. DECO          * N. DECO
D1                 P-B. DECO
D2

[* . . . INSERTED BOARD]
exit : ESC
  
```

"*" mark displays the boards which are presently inserted.

P/S. DECO	→	PAL/SECAM DECODER
N. DECO	→	NTSC DECODER
P-M. DECO	→	PAL-M DECODER
P-B. DECO	→	PAL-B DECODER
F. DECO	→	FAROUDJA DECODER

Go to (C).

FUNCTION

① SLOT BOARD

You can verify the boards (DECODER and DIGITAL) mounted in the slots within the monitor. (See section 7-2.)

② AUTO SELECT

You can select the decoder board and the deflection system that matches the input signal for each channel.

③ TEST PATTERN

You can set the scanning format and output for each test pattern.

④ DELAY BRIGHT

You can set the brightness for delay mode.

⑤ V/VS

You can set the clamp level (black level) of the monitor in each channel in conformity to the set up level of input signal.

If there are input signals that the set up level of 7.5% and of 0% to different channels, you can monitor constant black level screen by setting the V/VS in each channel.

(C)

Select "2.AUTO SELECT".

MENU2.2<SYSTEM>

-AUTO SELECT-

1. CH A
2. CH B
3. CH C [Y/C]
4. AUX A
5. AUX B
6. DIGITAL A
7. DIGITAL B

select : ENT

NTSC
PAL-B
PAL-M
525
625
NTSC
PAL-B

exit : ESC

You can set the deflection system mode of the analog and digital (D1) component signal input channels. The mode is usually the "AUTO". When the signal with the unstable sync of the simple VTR, etc. is input, selecting 525 or 625 fixes the deflection systems and you can monitor the stable picture.

- 525 : 525 line (60 Hz)
- 625 : 625 line (50 Hz)
- AUTO : It automatically detects whether the input signal is 50 Hz or 60 Hz and selects the deflection systems.
(when shipping from the factory)

Setting the selected decoder board for the analog and digital (D2, D 3) composite signal input channels attains the deflection systems as follows. The mode is usually the "AUTO". When the sync signal of the simple VTR, etc. or the signal with the unstable subcarrier is input, setting the selected decoder board forcibly is possible to monitor the stable picture.

mode	decoder board	deflection system
· NTSC	NTSC DECODER	525/60 Hz
· PAL-M	PAL-M DECODER	525/60 Hz
· PAL-B	PAL-B DECODER	625/50 Hz
· SECAM	PAL/SECAM DECODER	625/50 Hz
· AUTO	· It automatically detects the burst of the input signal and selects the decoder board. Also, the deflection systems are switched automatically. · In case of the input signal without the burst, it automatically detects whether the input signal is 50 Hz or 60 Hz, switches the deflection systems, and applies the signal to the equipped decoder board. When a few decoder boards are equipped, a decoder board is selected with the following prior order. At the state of "NO SYNC", a decoder board is selected with the following prior order according to the 525/625 set in the TEST menu.	
	· 525 (60 Hz)	· 625 (50 Hz)
	1. NTSC	1. PAL-B
	2. PAL-M	2. SECAM
	3. PAL-B	3. PAL-M
	4. SECAM	4. NTSC

Note) Set "AUX B" when using the optional DC301 dual component board.
Set "DIGITAL A/B" when using the optional DK301 D1 kit or optional DK302 D2 kit.

Go to (D).

(D)

Select "3.TEST PATTERN".

MENU2.3<SYSTEM>
-TEST PATTERN-
1. 525/625
2. CROSS HATCH
3. WINDOW
4. FULL WHITE
5. FOCUS
6. GRAY SCALE

525
ON
ON
OFF
OFF
OFF

select : ENT exit : ESC

You can set the output TEST signal of 525 or 625.

· 525 : 525 Line (60 Hz)

· 625 : 625 Line (50 Hz)

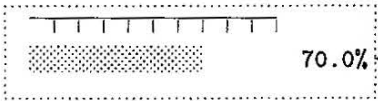
When the **TEST** switch is pressed, the TEST PATTERNS which are ON will be displayed in order.

Note) In "NO SYNC", the free run frequency is set at "1. 525/625"

· 525 : HD : 15.734kHz, VD : 59.94Hz

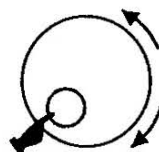
· 625 : HD : 15.625kHz, VD : 50Hz

Select "4. DELAY BRIGHT"

 70.0%

DELAY BRIGHT
save : ENT
exit : ESC

In item (6) setting, when the LEVEL DISPLAY is "ON", screen display will be controlled by moving the rotary encoder.



Brightness decreases.

Brightness increases.

※ The screen is changed to the DELAY state automatically and returned to the previous screen when the **ENT** or **ESC** switch is pressed.

Go to (E).

(E)

Select "5. V/VS"

MENU2.5<SYSTEM>

-V/VS SELECT-

1. CH A
2. CH B
3. CH C [Y/C]
4. AUX A
5. AUX B
6. DIGITAL A
7. DIGITAL B

select : ENT

VS
VS
VS
V
V
V
V

exit : ESC

V : PAL, RGB, YPbPr except BETA, D1
VS : NTSC, BETA, D2

※The V/VS of the TEST signal is as follows.

525 mode ... Step wave with plug (set up 0%) : V
Others : VS
625 mode ... V

※ The V/VS at the A/B SPLIT is the same mode as the state of CH A or CH B of SYNC set with the A/B SPLIT menu.

(5) INPUT

MENU3<INPUT>

-INPUT SELECT-

1. RGB/YPbPr
2. YPbPr MODE
3. CH C or Y/C
4. SERI/PARA
5. 8/10 bit

MODE1 : SMPTE · M H · N10

MODE2 : BETA MODE3 : USER

next : MENU

select : ENT exit : ESC

RGB
MODE 1
Y/C
SERI.
10bit

This sets the signal input to the AUX INPUT terminal. For details on YPbPr mode, see the bottom of the figure.

This switches the VIDEO INPUT terminal CH C input or the optional Y/C input.

In the optional DIGITAL input, this switches serial(SERI.) input or parallel (PARA.) input for CH A.

It also switches 8 bit or 10 bit in DIGITAL signal treatment.

FUNCTION

You can set the input conditions : RGB/YPbPr, CH C/Y/C, digital (8/10 bits, Serial/Parallel).

※ When shipping from the factory, they are set to RGB, MODE1, CH C, SERI and 10 bit.
Note) When the optional DUAL COMPONENT (2 systems input) board is used, set "1.RGB/YPbPr."

(6) MODE

MENU 4<MODE>

1. SCAN DISPLAY	16:9
2. H.PHASE	CH
3. LEVEL DISPLAY	ON
4. DELAY	H&V
5. SCREEN	MODE1
6. USER DISPLAY	TIME
7. BACK COLOR	BLACK
next : MENU	
select : ENT	

FUNCTION

① SCAN DISPLAY

Set the title to be displayed on the screen when SCAN is switched based on whether the specification is 4:3/16:9 switchable or 4:3 only.

- In case of 16:9
4:3 (UNDER) → 4:3 (NORMAL) → 16:9
- In case of OVER
UNDER SCAN → NOR SCAN → OVER SCAN

To select specification with 4:3 only, set OVER and change the screen size at OVER SCAN following 5-5 (1) Example 1. As a guideline, display 95% SAFE TITLE, and adjust size so that the 95% frame become incorporated with the escutcheon frame. If the screen center is off, it can be adjusted with H.CENT or V.CENT.

② H.PHASE

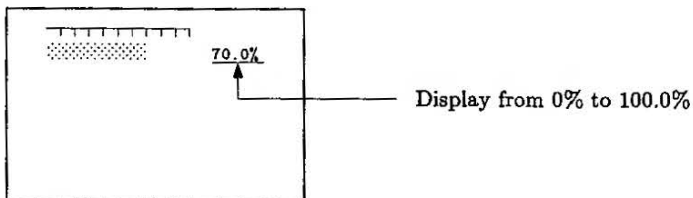
There are two ways to set the preset data with the pull-out panel H.PHASE switch.

- "CH" You can set for each channel. When you switch from "ALL" to "CH", the "CH" data previously stored into memory is output.
- "ALL" You can set the same value for all the channels. When you switch from "CH" to "ALL", the "ALL" data previously stored into memory is output.(when shipping from the factory)

③ LEVEL DISPLAY

It is possible to set whether the level meter will be displayed("ON") or not displayed("OFF") on the screen, when changing PRESET data items in the pull-out panel. In the "OFF" setting, only "MIN" and "MAX" values are displayed.

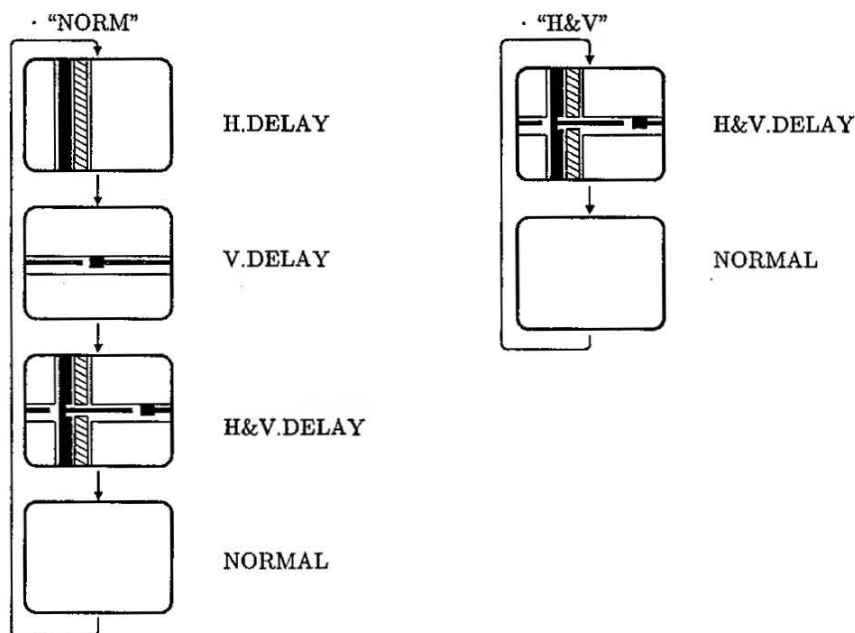
※When shipping from the factory, it is set to "OFF".



④DELAY

When the DELAY switch on the front panel is pressed, the DELAY condition switch-over mode is as follows :

※When shipping from the factory, it is set to "NORM".



⑤SCREEN

When the R, G, and B SCREEN switches on the front panel are pressed, the following operation takes place :

- "MODE 1" Only the color of the ON switch will be output.
- "MODE 2" Only the color of the ON switch will not be output.

"MODE 2" is a useful function for adjusting convergence.

※When shipping from the factory, it is set to "MODE1".

⑥USER DISPLAY

Title display in item (3) can be set in two different ways.

When the pull-out panel U.DISPLAY switch is pressed, the following operation takes place :

- In "NORM" condition : The title will ever be displayed.
- In "TIME" condition : The title is displayed for a further 2-3 seconds when the input channel is switched over.

※When shipping from the factory, it is set to "NORM".

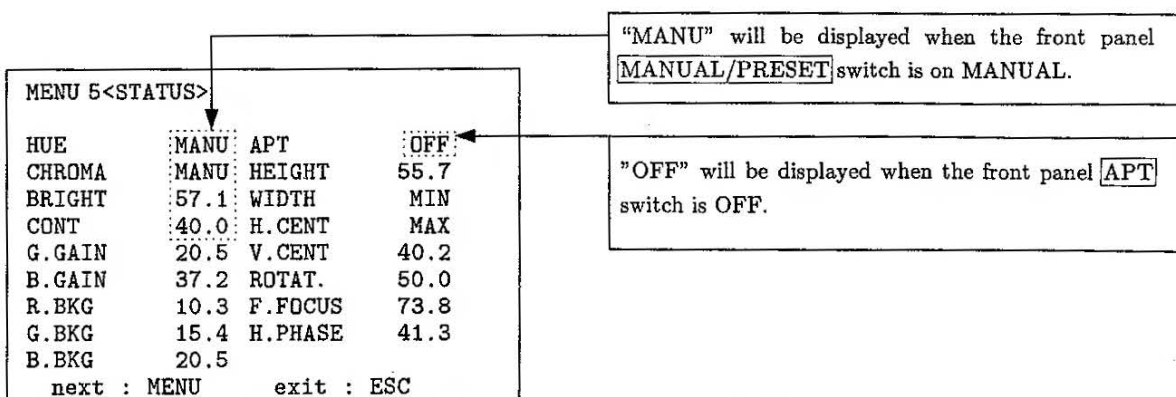
⑦BACKCOLOR

You can select the menu background color with "BLACK" or "NONE".

※When shipping from the factory, it is set to "NONE".

- "BLACK" : The backcolor of menu characters is black.
- "NONE" : The backcolor of menu characters is picture.

(7) STATUS



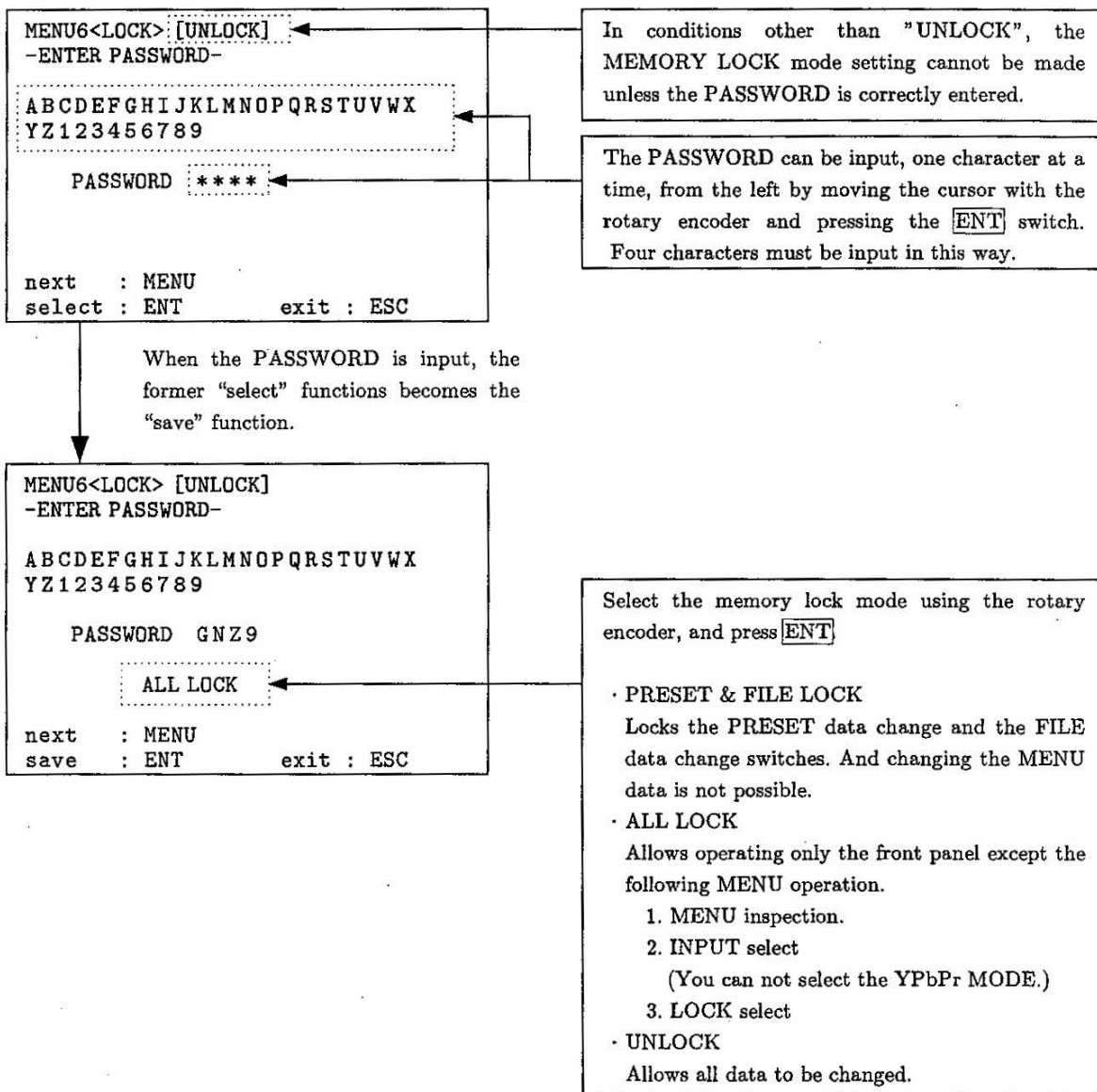
FUNCTION

Data can be output for elements of images displayed on the screen. This data is divided into 100 equal divisions from MIN to MAX, and is displayed in percentage (%) form.

- Note)
1. Preset data of 0% is the "MIN", and preset data of 100.0% is the "MAX".
 2. In the delay mode, the DELAY BRIGHT preset data is displayed at "BRIGHT".

※ Note the data when shipping from the factory because there is STATUS NOTE at the last page. Then if the data is changed wrongly, the data when shipping from the factory can be obtained simply.

(8) LOCK



FUNCTION

The memory lock mode can be set by using a password. The locked system cannot be unlocked without inputting a password, which proofs it against people other than the operator from interfering with data.

Note) If you forget the registered password, please contact your nearest Ikegami sales outlet.

5-7. Messages Displayed on the Screen

ALL LOCK	This message is displayed when the CHANGE PRESET , STORE FILE , or FILE 1 to FILE 3 switches are pressed, or when changing the data using MENU, when the LOCK mode setting (Refer to Section 5-6.(8)) is on "ALL LOCK" state. Operate after changing the LOCK mode to "UNLOCK".
PRESET & FILE LOCK	This message is displayed when the CHANGE PRESET or STORE FILE switches are pressed, when the LOCK mode setting (Refer to Section 5-6.(8)) is on "PRESET & FILE LOCK" state.
CHANGE PRESET → ON	This message is displayed when each PRESET switch is pressed (Refer to Fig. 5-3-3,4 ㉗-㉙), when the CHANGE PRESET switch is "OFF". Operate after turning the CHANGE PRESET switch "ON".
CHANGE PRESET → OFF	This message is displayed when the STORE FILE , and FILE 1 to FILE 3 switches are pressed when the CHANGE PRESET switch is "ON". Operate after turning the CHANGE PRESET switch "OFF".
DELAY → OFF	This message is displayed when the BRIGHT PRESET switch is pressed in the DELAY state. Operate after canceling the delay state. The brightness for the delay state is adjusted with Menu Item 2.
APT → ON	This message is displayed when the APT PRESET switch is pressed, when the APT switch is "OFF". Operate after turning the APT switch "ON".
DELAY PAL → S-PAL	* This message is only displayed during the PAL-B operation. This message is displayed when the HUE PRESET and HUE manual control switches are pressed, when the S-PAL switch is "OFF". Operate after turning the S-PAL switch "ON".
STORE FILE → OFF	This message is displayed when the CHANGE PRESET switch is pressed, when the FILE 1 to FILE 3 are blinking, by pressing the STORE FILE switch. Operate after pressing the STORE FILE switch and FILE 1 to FILE 3 stop blinking.
REMOTE SELECT → OFF	This message is displayed when the MENU switch is pressed in the REMOTE select screen (Refer to Fig. 5-3-5). Operate after leaving the REMOTE select screen.
MANUAL → PRESET	This message is displayed when the optional AUTO SET UP PROBE (ASP-15) is connected, when any MANUAL controls are the "MANUAL" state, or when selecting the PAL DECODER, the HUE manual control is the "MANUAL" state. Operate after canceling the "MANUAL" state.

CAN'T USE CHANGE PRESET	This message is displayed when the CHANGE PRESET switch is pressed, in the MENU operation STATUS screen (Section 5-6.(7)). Operate after leaving the menu by pressing the ESC switch.
MODE → VARIABLE	This message is displayed when the "VARIABLE PHASE" is selected, in the "REFERENCE MODE" when the MENU operation is SAFE TITLE or SPLIT screen (Section 5-6.(1), (2)).
NO SLOT DECODER	This message is displayed when the MENU operation is AUTO SELECT, when decode format is selected, but there is no DECODER board installed to handle the operation. For example, when NTSC signals are being monitored, install a NTSC DECODER board (SLOT section, Refer to 7.), and set the AUTO SELECT setting on "NTSC".
NO SLOT DECODER	This message is displayed when the decoder board corresponded to the input signal is not equipped, when you set to the "AUTO" mode in the AUTO SELECT setting of the MENU operation.
ENTER CORRECT PASSWORD	This message is displayed when an error is made in PASSWORD input, when the MENU operation is set in the LOCK mode. Input the PASSWORD correctly.
NO OPERATION	It is wrong operation. Operate exactly.
NO SYNC	This message is displayed when the SYNC EXT switch is "ON", when there is no synchronized signal with the input signal, or there is no external signal being input. Input an external synchronized signal, and turn the SYNC EXT switch "ON".
MIN	This message is displayed when the data value is minimum, when LEVEL DISPLAY(see section 5-6.(6)) state is "OFF"..
MAX	This message is displayed when the data value is maximum, when LEVEL DISPLAY(see section 5-6.(6)) state is "OFF"..

6. SUMMARY OF OPTIONS

No.	MODEL No.	MODULE NAME	NOTE
1	DK301	D1 Kits	DI301 + DP301 + SP301
2	DK302N	D2 Kits (NTSC)	DI301 + DP302N + SP301
3	DK302P	D2 Kits (PAL)	DI301 + DP302P + SP301
4	DI301	D1/D2 Input Module	D1 or D2 input (Serial and Parallel)
5	DP301	D1 Process Board	D1 to analog component processing
6	DP302N	D2 Process Board (NTSC)	D2 to analog composite processing (NTSC)
7	DP302P	D2 Process Board (PAL)	D2 to analog composite processing (PAL)
8	SP301	Sub Power Module	Power supply for D1 or D2
9	DE301	NTSC Decoder Board	Decoder board for NTSC (two boards)
10	DE302	PAL-B Decoder Board	Decoder board for PAL-B (one board)
11	DE303	PAL/SECAM Decoder Board	Decoder board for PAL-B/SECAM (one board)
12	DE304	PAL-M Decoder Board	Decoder board for PAL-M (one board)
13	DE305	*Faroudja Comb Decoder Board	Three line (2H) comb filter for NTSC (two boards)
14	SF301	Special Function Module	Y/C Input, Serial remote connector and YP _B P _R output
15	SF301S	Special Function Module	Y/C Input, Serial remote connector and YP _B P _R output
16	SRC301	Serial Remote Controller	Control of max 99 monitors
17	ASP15H	Auto Setup Probe	JAPAN (NHK) phosphor CRT
18	ASP15C	Auto Setup Probe	SMPTE-C phosphor CRT
19	ASP15E	Auto Setup Probe	EBU phosphor CRT, PAL 75% color bar
20	ASP15UK	Auto Setup Probe	EBU phosphor CRT, PAL 100% color bar
21	RCT20A	IR Remote Control	Infrared remote controller
22	RS1420	Rack Mount Adaptor	For TM14-20RH/RP, without slide rail
23	RS1420S	Rack Mount Adaptor	For TM14-20RH/RP, with slide rail
24	RS2020	Rack Mount Adaptor	For TM20-20/30RH/RP, without slide rail
25	RS2020S	Rack Mount Adaptor	For TM20-20/30RH/RP, with slide rail
26	DC301	Dual Component Module	2 inputs for RGB or YP _B P _R (single end)
27	EX301	Extender Board	Extenter board for maintenance of boards installed SLOT 1 to 5
28	TP301	Termination Plug	75Ω termination plug
29	SMC20/30	Service Manual	Manual for maintenance

* Under licence from Faroudja Laboratories

6-1. Digital Kit

(1) Summary

By mounting the DK301 (D1), DK302N (D2-NTSC), or DK302P (D2-PAL) digital kit, digital signals can be directly monitored on the monitor, so a highly faithful video can be reproduced without the distortion generated up till now in analog transmission.

(2) Features

- 1) Since a 10-bit D/A converter is used, both 10-bit and 8-bit systems can be used.
- 2) Since the post filter is an $x/\sin x$ compensation filter conforming to CCIR REC 601, faithful digital/analog conversion is possible.
- 3) Input/Output
 - Serial input 2 systems
 - Serial output 1 system (MONITOR OUT)
 - Parallel input 1 system

Serial input can be transmitted with cable equalization up to 200 meters (for 5C2V coaxial cable).

- 4) This monitor detects whether the input signals are 525 lines (60 Hz) or 625 lines (50 Hz) and automatically switches the deflection system (screen size, hold), for a D1 system not needing a decoder board, both types of signal scan be monitored easily.

(3) Configuration

The digital kits comprise the following three boards and are structured so that each can be installed simply.

- a) Sub power board (SP301)
 - b) D input board (DI301)
 - c) D1 or D2 board (DP301 or DP302N or DP302P)
- When installing a digital kit, the D1 and D2 (D3) system can be changed by simply replacing the c) board inserted into Slot 5 of Fig. 6.

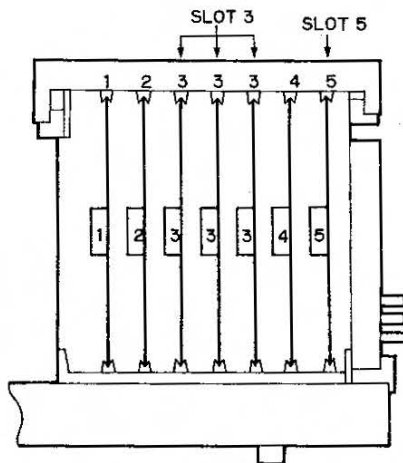


Fig. 6 Right Surface Slot Board Section

6-2. Various Decoder Boards

(1) Summary

A decoder board is mounted in the three locations of Slot 3 of Fig. 6 to handle up to all three formats NTSC/PAL/SECAM with automatic switching.

(2) Configuration

Combinations of up to three decoder boards can be used, so the range of combination is as follows.

DE303 and DE305 cannot be combined.

Decoder	Number of boards
DE301(NTSC)	2
DE302(PAL-B)	1
DE303(PAL/SECAM)	1
DE304(PAL-M)	1
DE305(FAROUJJA)	2

6-3. *Faroudja Comb Decoder Board (only NTSC)

*Under license from Faroudja Laboratories

(1) Summary

Since the Faroudja comb decoder board (DE305) uses a 3-line comb filter for NTSC Y/C separation, the picture can be reproduced with high picture quality and extremely low cross-color and cross-luminance.

(2) Features

- 1) *V. logic circuit
This circuit uses a 3-line comb filter to eliminate the cross-luminance on a line with no vertical relationship.
- 2) *H. logic circuit
This circuit eliminates the cross-luminance in the horizontal direction color transient.
- 3) *Chroma enhancer circuit
This circuit realizes a pseudo-broadband demodulation circuit with no ringing.

(3) Configuration

The set can be installed by just inserting the board into a blank spot in Slot 3 of Fig. 6.

Since this board comprises two boards, if the NTSC decoder board (DE301) is already installed, replace it.

6-4. Special Function Module (SF301)

(1) Summary

This module adds Y/C input/output, decoder output (Y_PP_R), and serial remote input/output functions.

(2) Features

1) Y/C input/output

One system of Y/C input that can be looped through with 7-pin metal connector.

2) Decoder output (Y_PP_R)

Since the Y_PP_R signal is output at this connector with high impedance, it can be used for signal checking.

3) Serial remote

The SRC-301 SERIAL REMOTE CONTROLLER provides connectors that can centrally control monitors up to 99 units with one coaxial cable.

This is optionally available for 17 and 18 series, too.

(3) Configuration

① SF-301: I/O board

② SF-301S: I/O board + ROM

When conducting serial remote control using SRC-301, SF-301S is required because monitors before the following serial numbers need to change ROM. Monitors after the serial numbers or those after the ROM version 2.1 (displayed on the MENU screen) do not need ROM change, as these are equipped with ROM.

Monitor	Serial No.
TM14-20RH/RP	AK2124~
TM20-20RH/RP	AN2319~
TM20-30RH/RP	N0402~

6-5. Auto Set Up Probe (ASP-15)

(1) Summary

This probe makes it possible to automatically adjust a 15/18/20/30 series monitors to the factory setting standard color temperature.

Also, user-defined data can be stored for the probe to automatically adjust other monitors to the same color temperature.

(2) Features

1) Automatic adjustment items

HUE (NTSC only), Chroma, Brightness, Contrast, G-B gain, R-G-B background

2) 4 sets of user-defined data can be stored for the probe.

(3) Configuration

Select one of the versions below according to the CRT phosphor.

MONITOR	Phosphor	Color Temperature	ASP-15 Version
TM14-20RH	CA	6500°K	ASP-15C
TM20-20RH	NHK (for Japan)	9300°K	ASP-15H
TM14-20RP	EBU	6500°K	ASP-15E



ASP-15 auto setup probe

6-6. Infrared Remote Control (RCT20)

(1) Summary

Using the wireless REMOTE CONTROL (RCT20A), TM14-17CS color monitors and 15/20/30 series can be controlled up to 99 units.

(2) Features

1) Control items (*...20/30 series only)

· Switching functions

COLOR/MONO, CH A/B/C, DELAY, SCAN, COMB/TRAP, S-PAL/D-PAL, APT ON/OFF, SYNC INT/EXT, DEGAUSS, FILE, R-G-B SCREEN, *DISPLAY SELECT(MENU, ENT, ESC, USER DISPLAY)

· Since ROM version 1.3

CH A/B/C → CH A/B/C/AUX/DIGITAL

· Since ROM version 1.4

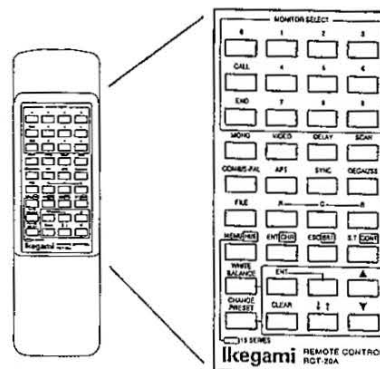
USER DISPLAY → SAFE TITLE

· Preset Data change functions

HUE, CHROMA, BRIGHTNESS, CONTRAST, R-G-B BACKGROUND, G-B GAIN, APERTURE, *H.CENT, *V.CENT, *H.PHASE, *HEIGHT, *WIDTH

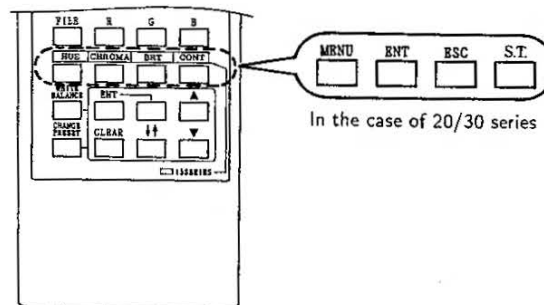
2) Setting REMOTE NOs. on the monitor side, it is possible to control TM14-17CS color monitors and 15/20/30 series up to 99 units.

(3) Configuration



RCT20A REMOTE CONTROL

The RCT-15 for 15 series can be used in the same manner with 20/30 series monitors, but since the 20/30 series have analog type manual/preset switching and manual level changing, when the RCT-15 is used as a 20/30 series monitor, the switch function must be as shown in the figure below.



RCT-15

In the case of 20/30 series

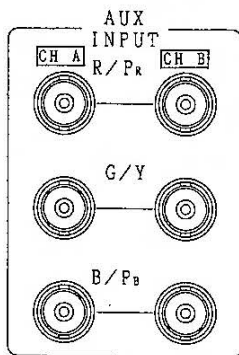
6-7. Dual Component Modules (DC301)

(1) Summary

Adding this function makes it possible to set 2-channel AUX input.

(2) Features

Each loop-through connector on the rear surface AUX INPUT section is a single end, the left and right connectors are set to CH A and CH B, so they can be switched from the front panel.



6-8. Rack Mount Adaptor

(1) Summary

Installing the rack mount adaptor makes it possible to hold a monitor with an EIA standard 19-inch rack unit.

(2) Installation method

The adaptor is installed according to the attached drawings below.

TM14-20 K4-950053

TM20-20/30 K4-950052

6-9. Terminate Plug (TP301)

Connect the terminate plug when loop-through is not being used.

6-10. Service Manual

Main contents:

- Maintenance adjustments
- Schematic Diagram
- Parts List

6-11 SERIAL REMOTE CONTROLLER (SRC-301)

(1) Summary

One SRC-301 can centrally control up to 99 units of monitors (17/18/20/30 series color monitors) which are set with numbers.

(2) Features

1) Control with BNC coaxial cable

As a coaxial cable is used for control, monitors can be centrally controlled only by serially connecting them (loop-through connectors).

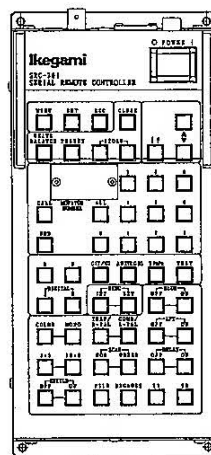
2) Individual control of monitors (up to 99 units)

Setting monitors (17/18/20/30 series) that are serially remote controllable with numbers from 1 to 99, each one of these monitors can be individually controlled.

3) Control items

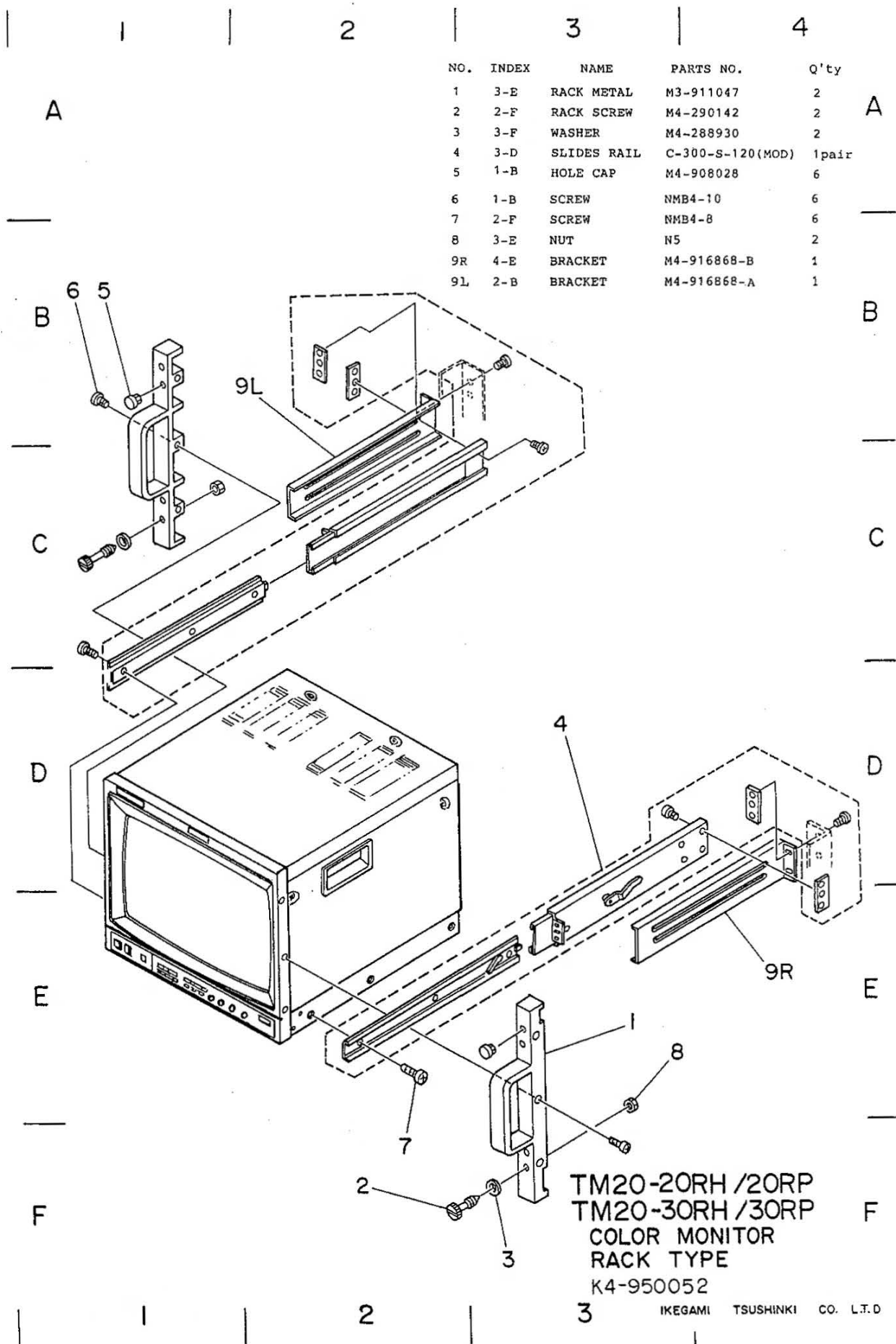
In addition to items described in 6-6 RCT20A (excluding R.G SCREEN), 4:3/16:9, NORMAL/UNDER scan can be controlled.

(3) Configuration

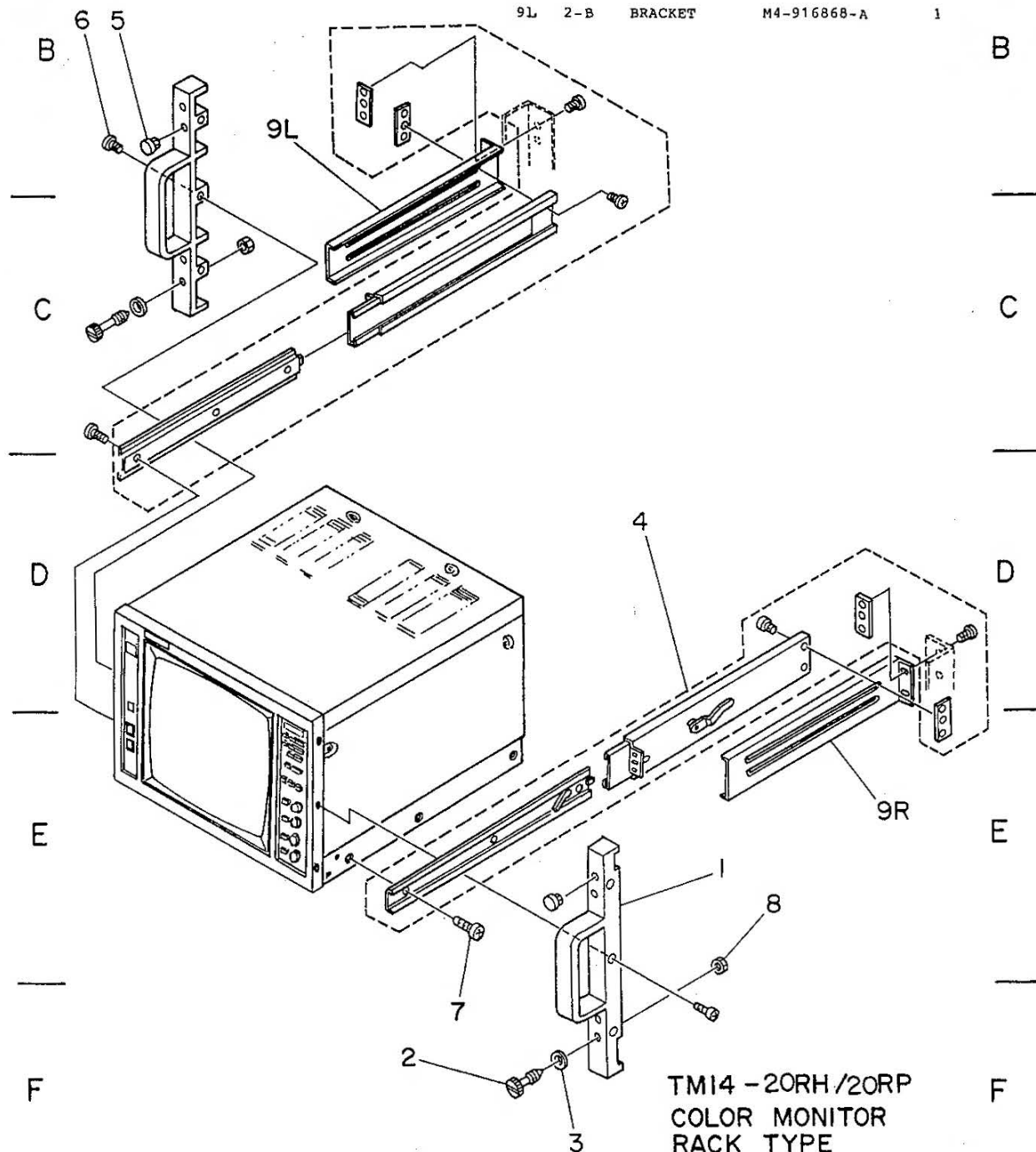


SRC-301





NO.	INDEX	NAME	PARTS NO.	Q'ty
1	3-E	RACK METAL	M3-950151	2
2	2-F	RACK SCREW	M4-288945	2
3	3-F	WASHER	M4-288930	2
4	3-D	SLIDES RAIL	C-300-S-120(MOD)	1pair
5	1-B	HOLE CAP	M4-908028	6
6	1-B	SCREW	NMB4-12	6
7	2-F	SCREW	NMB4-8	6
8	3-E	NUT	N5	2
9R	4-E	BRACKET	M4-916868-B	1
9L	2-B	BRACKET	M4-916868-A	1



TM14-20RH/20RP
 COLOR MONITOR
 RACK TYPE
 K4-950053

IKEGAMI TSUSHINKI CO. L.T.D

7. REMOVAL OF COVER

WARNING

Do not open covers, except for serviceman.
It is very dangerous as a high voltage exists inside.

7-1. How to Remove the Cover

The same procedure applies with the TM14-20RH/RP, TM20-20RH/RP, and TM20-30RH/RP models.

(1) Removing the Top Cover

Remove the four screws that hold on the top cover of the monitor. (Refer to Fig. 7-1-1)

Cover removal to this point is sufficient to carry out the white balance adjustment or the focus adjustment operations (Section 5-4).

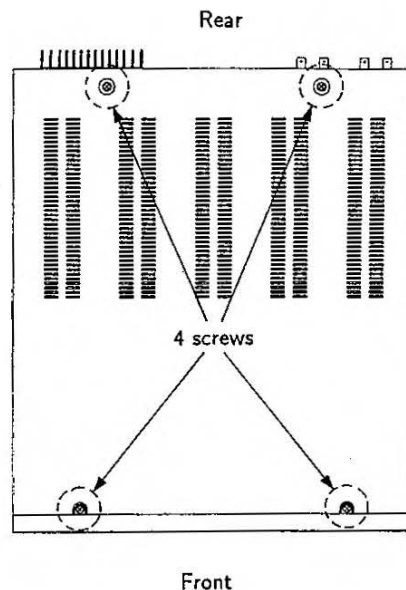


Fig. 7-1-1 Top Cover

(2) Removing the Side Cover

Remove the four screws holding on the covers of the left and right sides of the monitor. (Refer to Fig. 7-1-2, Fig. 7-1-3)

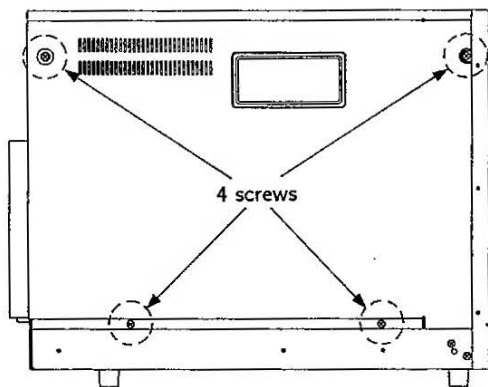


Fig. 7-1-2. Left Side Cover

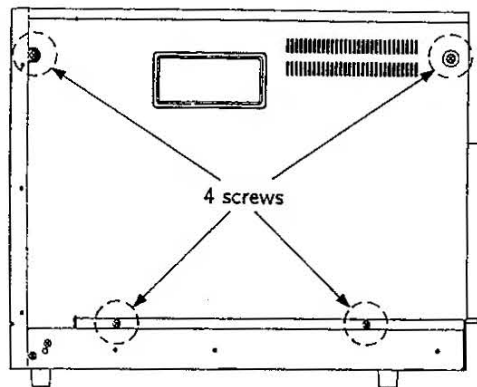


Fig. 7-1-3. Right Side Cover

In switching over the connector to stop changes to the ROTATION, remove only the left side cover.

When carrying out operations such as mounting a board in the SLOT section, remove only the right side cover.

(3) Removing the Rear Cover

Remove the seven screws holding on the rear cover of the monitor. (Refer to Fig. 7-1-4)

Optional input boards can be installed by removing only the rear cover.

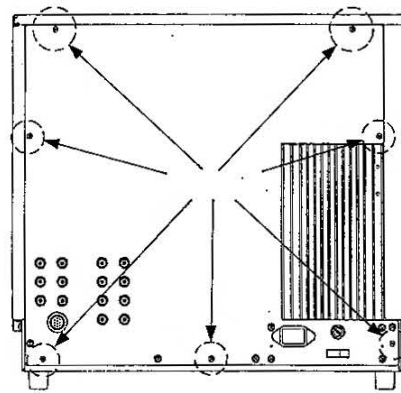


Fig. 7-1-4. Rear Cover

7-2. Interior of the Monitor

(1) TM14-20RH/RP

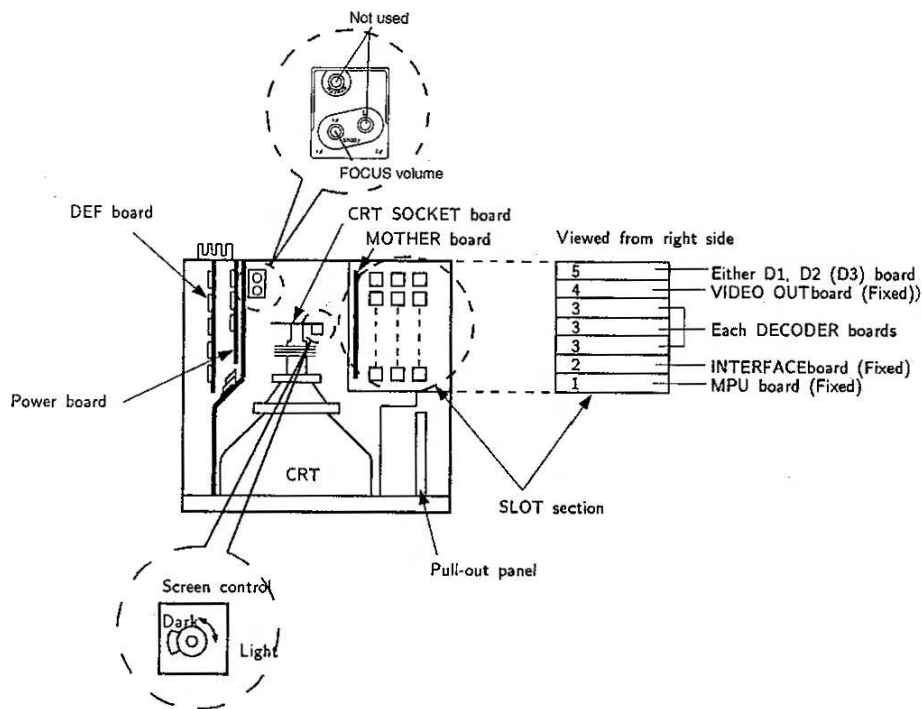


Fig. 7-1-5. Interior of TM14-20RH/RP

(2) TM20-20RH/RP, TM20-30RH/RP

While the TM20-20RH/RP and TM20-30RH/RP models vary in part, their basic layout is the same. As can be seen in the figure below, the position and form of the FOCUS control vary.

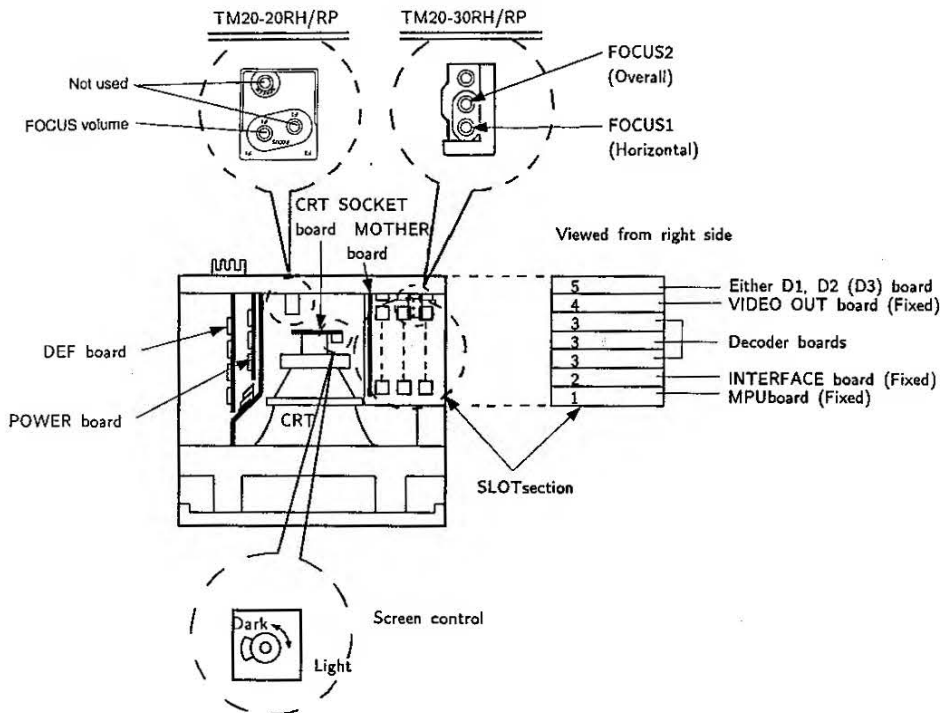


Fig. 7-1-6. Interior of TM20-20/30RH/RP

MENU 5 <STATUS>

HUE	()	APT	()
CHROMA	()	HEIGHT	()
BRIGHT	()	WIDTH	()
CONT	()	H.CENT	()
G.GAIN	()	V.CENT	()
B.GAIN	()	ROTAT.	()
R.BKG	()	F.FOCUS	()
G.BKG	()	H.PHASE	()
B.BKG	()		

next : MENU

exit : ESC

Memo

MENU 5 <STATUS>

HUE	()	APT	()
CHROMA	()	HEIGHT	()
BRIGHT	()	WIDTH	()
CONT	()	H.CENT	()
G.GAIN	()	V.CENT	()
B.GAIN	()	ROTAT.	()
R.BKG	()	F.FOCUS	()
G.BKG	()	H.PHASE	()
B.BKG	()		

next : MENU

exit : ESC

**TM14-20RH/RP
TM20-20RH/RP
TM20-30RH/RP**

COLOR MONITOR

Operation Manual

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